

KEEPING THE 'NEW KIDS'

In the second of two parts, we look at what it takes to retain twentysomething tech wizards. Page 38

REALITY CHECK

Liz Claiborne CEO: Common wisdom on e-commerce is foolish — there's a better way. Page 33

MASS EXODUS

Credit-card processor First USA sees 21 IT staffers quit in two-week resignation wave. Page 4

COMPUTERWORLD

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ATTACKS BRING
USERS TO FEDS

*Security collaboration
key to summit this week*

BY PATRICK THIBODEAU
WASHINGTON

As soon as eBay Inc.'s denial-of-service attacks began Feb. 8, the company's information systems department called Robert Chesnut, eBay's associate general counsel. It's an established routine. When called, Chesnut usually jogs across the company's San Jose campus to its control room to see what's up.

■ For more coverage on Web site security, see pages 4, 6.

Within 90 minutes of the attack, Chesnut contacted authorities. It was an easy decision for the former federal prosecutor from Virginia, but that may make him something of an anomaly. Information security experts say companies are often reluctant to involve

law enforcement, for fear that it may lead to unwanted consequences like having the FBI remove a server for evidence or disclose company secrets.

"I don't have that fear because I know how the FBI works," said Chesnut. The government "can make sure they get the evidence they need in a way that doesn't interfere with our service." He said he believes companies can overcome fears of working with

Security, page 81

B-TO-B PORTALS
WORRY INDUSTRY

*E-markets may cut
manufacturers' profits*

BY JAIKUMAR VIJAYAN
ORLANDO

Manufacturing companies are scrambling to devise strategies for dealing with the threat of profit erosion from business-to-business Web portals.

The electronic markets are

B-to-B Portals, page 81

MICROSOFT UNVEILS ENTERPRISE BID

*But few applications
exploit Windows 2000*

BY DOMINIQUE DECKMYN
SAN FRANCISCO

A self-confident Microsoft Corp. made its bid for the high-end, mission-critical platform market last Thursday, rolling out Windows 2000 and touting the operating system's reliability and scalability.

After multiple delays and a protracted beta cycle, there were few surprises at the launch, though Microsoft Chairman and Chief Software Architect Bill Gates still managed to impress the audience with some demonstrations of the operating system's features for mobile users, systems administrators and massive Web servers.

Windows 2000, page 16

PARTS MAKER PINS
PROFITS DIP ON IT

*Thomas & Betts cites Net-based ordering
system in shipping delays, order backlog*

BY JULIA KING

Thomas & Betts Corp., a \$2.5 billion electrical parts manufacturer, is blaming problems with a new Internet-based order management system for a

50% nosedive in fourth-quarter profits — plus another \$42 million in losses caused by order and shipping disruptions.

Last week, shareholders responded by slapping the Mem-

phis-based company with a class action suit that claims that T&B "misled investors concerning the successful implementation of its Web-enabled order processing systems."

"We chose to transition to those new systems at a time when our organization was already engaged in a massive

Ordering System, page 81



JIM PREVO, CIO at Green Mountain Coffee, foresees customers with GPS-enabled devices being able to find the closest store to get a cup of Green Mountain java

TRACKING
THE MOBILE CUSTOMER

THE GOVERNMENT'S SATELLITE-BASED Global Positioning System — used by soldiers and sportsmen to figure out where they are — is about to revolutionize the world of e-commerce. Patrick Thibodeau reports that marketers are salivating at the prospect of millions of consumers walking and driving around with GPS-enabled Internet access devices. By knowing exactly where the consumer is located, electronic marketers can offer directions, discounts and come-ons to the closest retail outlet. Unless consumers find it too spooky.

E-COMMERCE

Story is on page 18.



ERP PROMISED LANDS

It takes a new class of skills to extend ERP benefits to entire systems, The Hunter Group's David Link says. But for those who have ERP experience, Web skills and industry knowledge, things look very rosy indeed. Page 40

KATHERINE LAMBERT

LAND OF PLENTY

New York's Long Island offers an abundance of the good life, great neighbors and a growing high-tech job market. Page 74



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FEBRUARY 21, 2000

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- 33 ALIGNING IT** and business is a skill that can be taught, a consultancy claims; the goal is to let users help themselves.
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- QUICKSTUDY**
- 52 TRACKING STOCKS** proliferate, especially in e-commerce, but what are they?

OPINIONS

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Windows 2000 Launch Coverage

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- OS bugs memo causes uproar, Page 16
- Online: Our Win 2k Watch has forums, case studies, surveys and more.
www.computerworld.com/win2k

- 28 JOHN GANTZ** warns that e-business has revolutionized the notion of capacity planning.
- 28 WILLIAM ULRICH** believes e-commerce organizations should consider an organizational model that can deal with both order and chaos.
- 36 ED YOURDON** writes that competitive pressures are forcing IT to complete projects at a death-march pace, but he says

that even a death march can be managed intelligently.

- 53 JOE AUER** says negotiations require fine-tuned cross-disciplinary teams and maps out the procurement dream team.
- 82 FRANK HAYES** says Win 2k is a monster that Microsoft is unleashing on the world, but users may have no recourse if other states follow Virginia's lead on licensing law.

AT DEADLINE

False Merger Posted On Biotech Firm's Site

Aastrom Biosciences Inc. in Ann Arbor, Mich., was in damage-control mode Friday after vandals posted a false press release on its Web site announcing that the company was merging with biotechnology rival Geron Corp. in Menlo Park, Calif. Both companies' shares spiked on Wall Street before the fraud was exposed. Aastrom disabled its Web site and notified investors that the merger release was false. Geron posted a merger denial on its site.

Travel Agents Seek DOJ Intervention

The American Society of Travel Agents in Whitefish, Mont., asked the U.S. Department of Justice to act against 27 airlines that are developing a travel Web site, charging that the effort could result in price fixing and a sales monopoly for on-line travel agents. Ben Bartlett, a vice president at The Boston Consulting Group, which is building the site, said the site would be run independently of carriers and provide more choices for consumers.

PSEG Establishes Online Energy Auction

PSEG Energy Technologies in Edison, N.J., said its business customers in the Northeast will be able to access its new energy auction starting March 1 via its Web site (www.pseg.com). The auction was designed to run in real time, with prequalified suppliers entering bids to supply and deliver energy based on customers' posted needs.

Short Takes

Matching Wall Street expectations, **NOVELL INC.** posted quarterly earnings of \$45 million, a 55% jump from the same period last year. . . . Tomorrow, **CONCORD COMMUNICATIONS INC.** in Marlboro, Mass., will release AdvantEdge, a Unix and Windows Web application monitoring, management and reporting module that plugs into its eHealth system monitoring software.

First USA IT Staff Hit By Wave of Resignations

Moves by parent Bank One cited as cause

BY MARIA TROMBLY

TWENTY-ONE top information technology managers have resigned from credit-card giant First USA Bank in the past two weeks, citing problems with Bank One Corp.'s management practices.

Since Chicago-based Bank One acquired First USA in 1997, the credit-card company has been hit with a falling stock price, customer defections and missed earnings targets twice within the past two years.

"The Bank One people didn't understand the First USA culture, and they tried to squeeze some extra profits out of it," said a former First USA IT manager, who resigned Feb. 4.

According to an IT professional employed at First USA who requested anonymity, a total of 21 people quit within four days.

Company officials said IT department operations won't be affected by the resignations. "We continue to have a strong IT department," said Jeff Unkle, vice president of corporate

affairs at First USA in Wilmington, Del. "I seriously doubt there's going to be any effect. . . . We've always been able to attract good, strong talent."

Unkle, who declined to comment on the allegations of mismanagement, added that IT professionals enjoy a strong job market today and may leave their jobs for a variety of reasons. He said the people who resigned make up only a small percentage of First USA's IT staff. Though Unkle wouldn't release the number, Theodore Iacobuzio, an analyst at TowerGroup in Needham, Mass., estimated that approximately 3,000 employees work for First USA's IT arm.

"This isn't men in white coats. This is the executives. You're talking about major turmoil at the second-largest issuer of credit cards in the world," Iacobuzio said. "It is a big deal [because] of what it says about the corporation, but they probably will not have trouble finding replacements."

According to Iacobuzio, the resignations are yet another sign of the turmoil First USA is

experiencing. "It is unclear whether it will remain part of Bank One or be spun off," he added.

Unkle rejected the allegation that the resignations are a symptom of larger problems. First USA was asked to do a

You're talking about major turmoil at the second-largest issuer of credit cards in the world.

THEODORE IACOBUZIO, ANALYST, TOWERGROUP

strategic review of its business at the end of last year, he said, but the same was true for all Bank One companies.

First USA was the major topic at Bank One's Jan. 11 presentation to investors, where a "Fix First USA" initiative was announced as a top priority for

the coming year. First USA failed to meet two earnings targets last year, and its stock price is now valued at less than half its May 1999 peak of \$62 per share, according to Tom Kelley, head of Bank One's corporate and media relations.

CEO Cites Problems

According to analysts and three First USA IT professionals, Bank One attempted to squeeze high earnings out of First USA by raising credit-card fees, which resulted in the loss of customers and earnings downturns.

"They were too worried about short-term earnings," said analyst Diana Yates, who monitors Bank One at A. G. Edwards & Sons Inc. in St. Louis. She added that consumers are flooded with credit-card offers; when First USA raised its fees, customers had plenty of other cards they could switch to.

At the Jan. 11 presentation, First USA CEO William Boardman confirmed that the fall in performance was due to the credit-card fee structure, which has since been overhauled. He said the company had already instituted fair and competitive pricing and would "reduce unnecessary complexity, improve organizational effectiveness and leverage advantage from information management."

"Bank One is starting to step in and mess around with the business," said a First USA IT employee who didn't want his name to be used. ■

Experts Cite Canadian Teen in Web Attacks

University computer yields clues in case

BY ANN HARRISON

Two California security analysts said they have provided the FBI with information the agency is using to track down one of the suspected attackers in the recent distributed denial-of-service attacks.

Michael Lyle, chief technology officer at Recourse Technologies Inc. in Palo Alto, Calif., said his company passed along information about a computer cracker named MafiaBoy who had posted messages on Internet Relay Chat (IRC) in-

quiring about which sites to attack.

According to Lyle, MafiaBoy is suspected of attacking sites owned by ETrade Group Inc. in Menlo Park, Calif., and Cable News Network (CNN) in Atlanta by breaking into academic machines, including at least one at the University of California, Santa Barbara (UCSB).

Method of Attack

Lyle said MafiaBoy allegedly exploited a hole in the WU-FTP file exchange software at UCSB and then used the breach to insert the Tribe Flood Network tool that prompts captured computers to carry out distributed denial-

of-service attacks. He said the method of attack was less sophisticated than those used in the earlier assaults against Yahoo Inc. and eBay Inc. "The original breaking in could have been some time ago," said Lyle.

Fred Cost, vice president of marketing at Recourse, said authorities suspect that MafiaBoy is a 15-year-old Canadian boy who is now being investigated by the Royal Canadian Mounted Police, which has been investigating the records of Internet Direct Business Solutions, a Canadian Internet service provider in Toronto.

The FBI hasn't confirmed that it's investigating the alleged Canadian cracker. Lyle

and Cost said that while they keep their ears close to IRC and other discussion areas favored by those interested in distributed denial-of-service attack tools, evidence leading to suspects in the other incidents doesn't appear to be as strong.

"Listening to the hacker community, there have been no credible claims for responsibility for those attacks," said Lyle. "There is nothing I actually believe."

UCSB officials reported that a Unix computer in a university research lab was used to help launch a distributed denial-of-service attack against CNN.com during the Web onslaught [News, Feb. 14]. ■

MORE THIS ISSUE

For more coverage of Web site security, see page 6.

New!

Visual SyncSort: Mainframe Power with Desktop Simplicity

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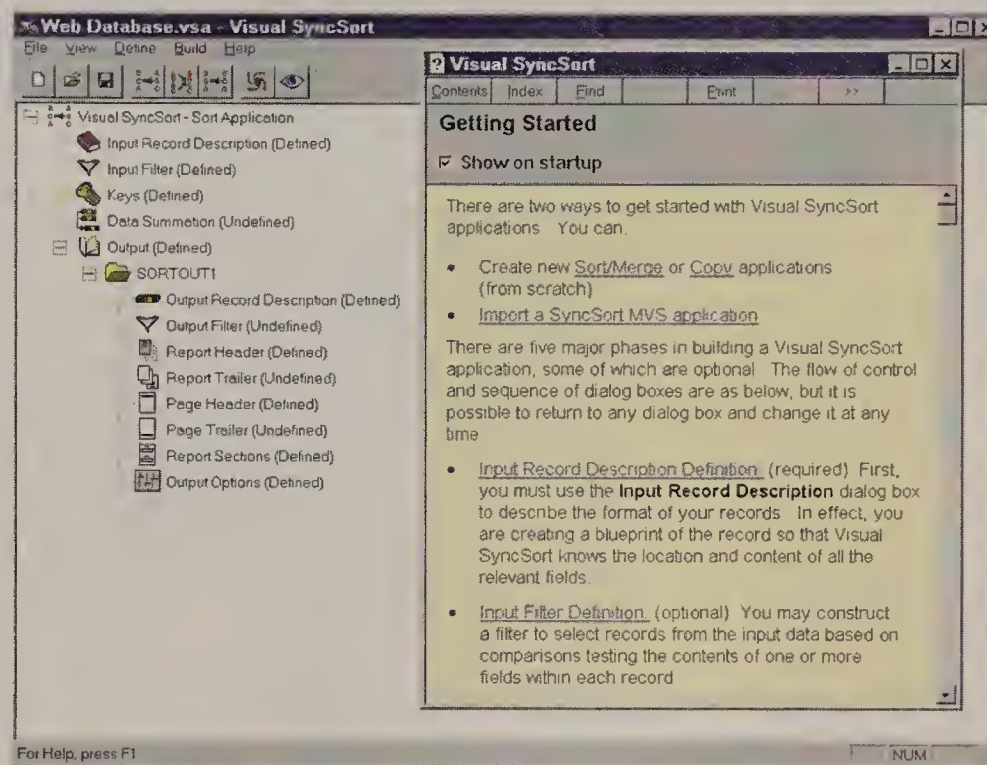
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Surviving Costly Web Strikes

E-commerce operators eye site insurance

BY ANN HARRISON
AND KATHLEEN OHLSON

THE TOTAL cost to e-commerce companies targeted in this month's distributed denial-of-service attacks is in dispute. But the anxiety caused by the events has spurred an interest in site insurance.

Patrick Di Chiro, a spokesman for ETrade Group Inc. in Palo Alto, Calif., said that by shifting traffic load to unaffected servers and providing live brokers via a touch-tone telephone system, the company's site lost few commissions or customers. The stock trading site weathered a 90-minute attack. "These alternatives mean that we always have backup and redundancy to make sure people can always access the service," Di Chiro asserted. "There was no signif-

icant financial impact."

But calculating hourly traffic and sales at the targeted sites suggests that busy operations could have suffered significant losses. Based on a projected \$528 million in sales this quarter, Amazon.com Inc. may have lost almost \$240,000 during the hour that spokespeople

said the site was crippled by an attack. The Seattle-based retailer declined to comment on specific financial damages.

Early last year, The Standish Group International Inc. in Dennis, Mass., calculated that an Internet outage cost a site \$10,000 per minute, not including market capitalization.

The Yankee Group in Boston estimated that the recent denial-of-service attacks cost the industry \$1.2 billion dollars including market capitalization.

Given the potential for loss and difficulties in stopping denial-of-service attacks, Hewlett-Packard Co.'s recent offer of up to \$2 million in insurance coverage for companies suffering revenue losses during security breaches turned heads (see "HP Offers Site Insurance," at right).

"Attacks can't be anticipated and there's no way of knowing whether your countermeasures are adequate, and therefore insurance makes sense," said Paul

Accampo, director of strategic relations at Colorstamps Inc. in San Jose. The company gives visitors cash rewards when they search for products or information at its site.

"Advertisers only pay us when they get action on our site, and if we can't deliver those actions, advertisers aren't paying us and we aren't meeting our targeted revenues," said Accampo.

HP is teaming with Lansing,

Mich.-based J. S. Wurzler Underwriting Managers LLC, which will underwrite the policies. Interex, a 7,000-member nonprofit organization of HP computing professionals in Sunnyvale, Calif., will sell the policies to over 10,000 HP Unix users with existing support contracts.

Steve Parker, HP's general manager of mission-critical services said, "I think the [\$10,000 per minute loss] number will move up as we transact more and that's why Wall Street is interested in the impact of outages." ▀

Virus Damage

Losses from computer viruses during the first half of last year, according to **Computer Economics:**

\$7.6B

Losses from denial-of-service, including market capitalization, according to **The Yankee Group:**

\$1.2B

Web Attacks Spur Security Tactic Checks

Much responsibility lies with Internet service providers

BY ANN HARRISON

Attorney General Janet Reno said last week that the recent wave of distributed denial-of-service attacks that hit high-profile Web sites earlier this month were a "wake-up call" to improve Internet security.

Service providers and security analysts have heard the call and are taking a closer look at defensive technologies. A combination of defensive Web site-monitoring strategies and more sophisticated network filtering by upstream providers is considered ideal.

Amit Yoran, president and CEO of RIPTech Inc. in Alexandria, Va., and the former director of the vulnerability assessment program at the U.S. Department of Defense's computer emergency response team, faulted e-commerce operators who fail to update on-site monitoring systems.

Yoran said service providers must also implement better filtering strategies for throttling floods of packets that can shut down legitimate traffic. He said the DOD was capable of thwarting attacks by monitoring high-speed gateways and blocking connections at the OC3 level and faster.

"At this point, what most of us in the really serious electronic commerce business are doing is relying on multiple Internet access providers," said Sam Prather, senior vice president of engineering at Commerce One Inc. in Walnut Creek, Calif., which harnesses hundreds of servers to run its business-to-business e-commerce portal. The firm is upgrading from three T1 lines to multiple DS3 circuits.

Prather said he was confident of the system monitoring provided by siteRock Corp. in Emeryville, Calif., which checks the portal and company's home site for availability. He said the close performance monitoring would give Commerce One the ability to detect

an attack quickly and take defensive measures such as blocking specific IP addresses.

"The power of using an external monitoring service is you can catch an attack in the first two or three minutes after it has started, and in the worst case you can shut your routers down," said Prather. "If we can recognize the characteristics of the flood we can filter it."

Prather said the advantage of having many access providers is that if one is under attack, a site can shift its traffic to another provider that does better filtering. But he declined to name his upstream providers for fear they may be attacked.

Santa Clara, Calif.-based Arca Systems Inc. provides security services for Exodus Communications Inc., also in Santa Clara, which hosts the Buy.com Inc. site that was attacked earlier this month. Arca President Bill Wilson said Exodus was looking for ways to get more comprehensive information on the attacks from network routers before packets hit the sites. ▀

HP Offers Site Insurance

BY KATHLEEN OHLSON

As companies scramble for new ways to protect themselves in the wake of the recent round of denial-of-service attacks, Hewlett-Packard Co. is hoping to cash in on this need. Beginning in May, the vendor will offer companies up to \$2 million in insurance if they suffer revenue losses during a security breach involving HP Unix systems (see chart).

HP last week teamed with Lansing, Mich.-based J. S. Wurzler Underwriting Managers LLC, which is backed by Lloyd's of London, and Interex, a nonprofit organization of HP users. Under the insurance program, J. S. Wurzler will underwrite the policies and Sunnyvale, Calif.-based Interex will offer the rates.

The service will target online retailers, traditional companies moving to the Internet and online travel and auction sites. Though initially covering only HP Unix systems, the insurance may later extend to Linux and Windows NT prod-

ucts, said Steve Parker, HP's general manager of mission-critical services.

But the high cost of security assessments and preparation for unknown hacker tools may outweigh the value of the insurance, analysts said.

"Insurance companies take ownership of the risk, and the problem is, they don't have any experience actually paying out these [computer security] policies," said Lloyd Hession, an analyst at Giga Information Group Inc. in Cambridge, Mass. It costs hundreds of thousands of dollars to conduct truly in-depth security evaluations, and general insurance provides either high or low premiums, or very restrictive policies, "so the policy isn't worth the paper it's written on," Hession said.

But other analysts said the HP approach may well be a step in the right direction.

Matt Kovar, an analyst at The Yankee Group in Boston, said the coverage fills "the new cyber black hole of liability, in terms of reliability." There are currently service-level guarantees that are billed as insurance, and HP's policies will manage both security and insurance.

Frank Prince, an analyst at Forrester Research Inc. in Cambridge, Mass., noted that HP is also letting its customers know that the company will stand behind its products. "The amount [of any security insurance] isn't much in relation to the real damage," he said. "Bad PR and the cost to put the lost data back isn't part of the insurance." ▀

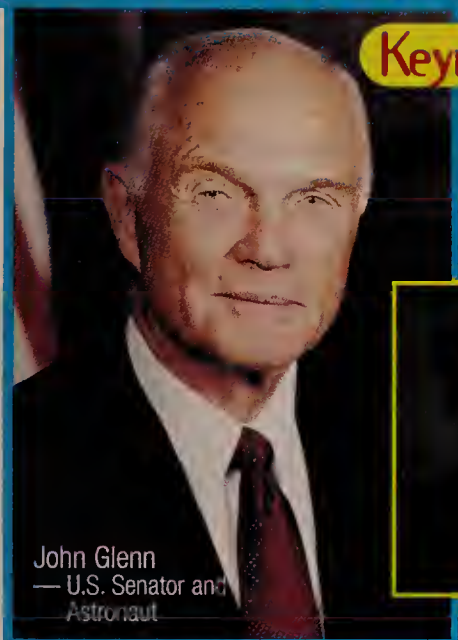
AT A GLANCE

Security Insurance

Details of Hewlett-Packard's security insurance program, which will launch in May:

- Up to \$1M coverage for e-commerce businesses with \$30M to \$100M in revenue
- Up to \$2M coverage for e-commerce businesses with revenue over \$100M
- Available to businesses in the U.K., Canada, Germany, Italy, Spain, France, Australia, Japan and the U.S., excluding New York, Texas, Ohio and Illinois

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John Glenn
— U.S. Senator and
Astronaut

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Officer, Charles B. Wang, President and Chief Operating Officer,
Sanjay Kumar, and United States Senator and Astronaut, John Glenn.

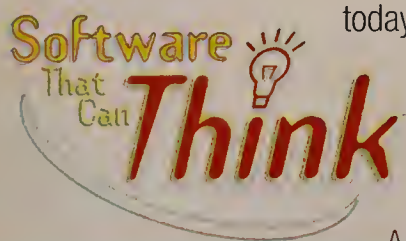


Networking Opportunities

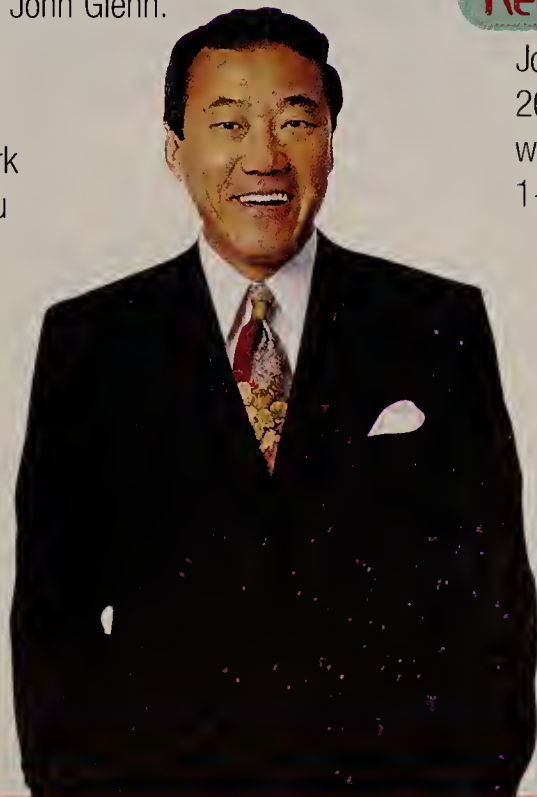
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BRIEFS

Bank, Portal in Deal

Citigroup Inc.'s New York-based e-Citi unit and Commerce One Inc. in Walnut Creek, Calif., have announced plans to offer a business-to-business Internet marketplace. It will process procurement transactions and link Citibank's corporate customers with suppliers online. The new venture, known as Citibank Procurement Connection, will also host vendor catalogs online.

SGI Computers to Help NASA Map World

3-D computers developed by Silicon Graphics Inc. in Mountain View, Calif., have been enlisted to transform nearly 1 trillion measurements that will be recorded by the space shuttle *Endeavor* in an upcoming radar topography mission. The mission will be headed by NASA, its Jet Propulsion Laboratory and the National Imagery and Mapping Agency. *Endeavor* is using radar interferometry to gather raw data to create a 3-D image of Earth.

Palm Flies New Pilots

Palm Computing in Santa Clara, Calif., will unveil its first color-display handheld this week, as well as a handheld for enterprise customers. The latter handheld has a new operating system, a portable keyboard and a security feature to password-protect entries. The color model, the Palm IIIc, will cost \$449. The Palm IIIxe will cost \$249.

Keane Wins Contract

Boston-based Keane Inc. won a \$20 million, five-year application outsourcing contract with GMAC, the financing arm of General Motors Corp. in Detroit. Keane will support vehicle pricing, expense reporting and other applications throughout GMAC's North American branches.

Tax-Filing Glitch

Some online tax customers of H&R Block Inc. in Kansas City, Mo., got a scare recently. Customers who logged on to the software to finalize tax returns inadvertently imported data from other customers. The program was fixed last Monday.

Users Clamor for Access to Software

Reporting tools in new SAP app are big hit

BY CRAIG STEDMAN
SAN FRANCISCO

AT FIRST, end users were frustrated by the limited reporting capabilities built into SAP R/3. But now, some early adopters of SAP AG's new data warehousing software are having trouble keeping up with demand for access to those applications from their users.

At an SAP conference here last week, a half-dozen technology and business managers said R/3 users have been waiting so long for better reporting tools that it's hard to satisfy all of them without devoting more manpower to rolling out the data warehousing software.

"The demand for these applications is outpacing our ability to deliver," said Michael Crowe, director of global data warehouse development at Colgate-Palmolive Co. in New York. "We've been telling [users] to wait. Now we have [the warehousing software], and they want us to deliver what they didn't get in R/3."

Since last fall, Colgate-Palmolive, a \$9 billion maker of toothpaste and other consumer products, has opened SAP's Business Information Warehouse to 300 users in North America and a smaller number in its Asia-Pacific operations for analyzing sales, marketing and financial data.

But there's a long list of users who want to tap into Business Information Warehouse to get at data that can analyze operations and help them make better business decisions, Crowe said. Among them, he said, is CIO Ed Toben, who wants to track what the company spends on technology.

To speed things up, Crowe's team is trying to design data marts flexible enough to be used by managers and analysts in different units. "We need to be fast," he said.

The World Bank is under the

same kind of pressure. The Washington-based lender has about 450 users trained on Business Information Warehouse. But still more are on the outside looking in, said Luisita Guanlao, manager of data administration at the bank.

Reporting within an R/3 enterprise resource planning (ERP) system is "very difficult for people to handle," she said. "When they see something like this, they're very anxious to have it. They're clamoring for this kind of capability."

Ed Markowitz, a Cincinnati-based analyst who edits a newsletter called "ERP Strategy," said companies need to give end users better reporting and analysis tools if they

want to reap the payback on R/3 investments. Business Information Warehouse "is the missing piece of R/3," which is why users are so desperate to get access to the software, he said.

Even Hasso Plattner, SAP's co-CEO, conceded that R/3's built-in reporting tools aren't good enough by themselves. Until Business Information Warehouse became available last year, "it's fair to say that reporting was the weakest part of the SAP system," he said.

But the software is maturing into a product with full data warehousing capabilities. That has made it difficult to provide everything end users are looking for, some attendees said.

At Hercules Inc., "it was like [Business Information Warehouse] was going to solve world hunger," said Daniel

JUST THE FACTS

SAP's Data Warehouse

What it is: Data warehousing software includes an Excel-based analysis tool, pre-defined reports and data marts for extracting data from SAP R/3.

Its appeal: Reporting tools built into R/3 limit functionality, making analysis of data collected by ERP systems difficult.

Its status: SAP says that about 200 Business Information Warehouse installations are live. A second version was released last week, and a full upgrade will be out in June.

Curran, manager of data administration and warehousing at the chemical maker in Wilmington, Del. "The expectations were way too high."

The software has helped speed up Hercules' monthly financial reporting, but Curran said the company still has to combine sales and financial data to give end users a full view of business. Of the 5,000 users who were trying to get reports out of R/3, he said, only about 700 can access Business Information Warehouse so far. ▀

Time Is Short for Microsoft

Antitrust verdict could arrive soon

BY PATRICK THIBODEAU
AND KIM S. NASH
WASHINGTON

Unless there's a settlement breakthrough, Microsoft Corp. will be in court Tuesday to deliver its final — and possibly futile — arguments as to why it's not guilty of antitrust law violations.

U.S. District Court Judge Thomas Penfield Jackson may issue his verdict as early as next month.

Although negotiations continue in Chicago with a mediator, Microsoft is trying to nudge talks in its favor by appealing for congressional help.

In a Feb. 9 e-mail sent to members of Congress, Microsoft urged legislators to encourage the government to accept a "common sense" solution and reject the demands of its competitors for a breakup.

"Their reason is clear

enough — slow Microsoft down with the equivalent of a regulatory death sentence while the high-tech economy whizzes by on Internet time," said the e-mail sent by Microsoft lobbyist Kerry Knott.

Stephen D. Houck, former lead trial counsel for the 19 state plaintiffs, called the letter "atmospheric."

"It's probably an attempt to pressure the Department of Justice to be more conciliatory during the settlement negotiations," said Houck, who is now in private practice at Reboul, MacMurray, Hewitt, Maynard & Kristol in New York.

Microsoft's letter to Congress follows a stream of money the company has placed in legislators' election coffers. In the 1999-2000 congressional election cycle, Microsoft's political action committee has given \$112,500 to candidates so far, with 54% going to Republicans, reports the non-partisan Center for Responsive Politics in Washington.

In the presidential race, Mi-

crosoft employees have sent \$34,000 to Democratic and \$45,650 to Republican candidates, the center reported.

But for Microsoft right now, time may be more important than money.

Tuesday, when final court arguments are scheduled, is critical. If no agreement is reached, Jackson will probably move to issue a verdict. But if a settlement looks possible, he could delay the oral arguments or withhold his verdict.

Jackson is expected to rule against Microsoft, based on his findings last November that it's a monopoly without fear of competition. Being a monopoly isn't illegal, but the case alleges that Microsoft illegally maintained that monopoly through its business practices. The two sides will argue that point in court on Tuesday.

That closing arguments are scheduled so soon might spur a settlement, said Hillard Sterling, a lawyer at Gordon & Glickson PC in Chicago.

"It is a common settlement tactic to dig in and appear unwilling to move, until the clock starts ticking down to the final minutes," Sterling said. ▀

Q

NEED THE RIGHT PLATFORM FOR WINDOWS 2000? SO DID MICROSOFT.

Compaq is the primary server platform that Microsoft used to design and develop Microsoft® Windows® 2000. We also have the broadest, most widely tested PC platforms for Windows 2000 Professional. That's because Compaq engineers were on site at Microsoft, working hand-in-hand to bring Windows 2000 on Compaq to even higher levels of availability and reliability. For you, that means Compaq solutions that are already fully optimized for Windows 2000. And to simplify your transition, we have the best migration tools plus more Microsoft Certified Windows 2000 specialists than anyone. It's a Compaq NonStop™ eBusiness Solution because, with us, you can make the move without stopping for anything. For more on why we're the best choice, perhaps the only choice, visit www.compaq.com/windows2000.

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Sterling to be Swallowed by Even Bigger CA

BY SAMI LAIS

News of the \$4 billion bid by Computer Associates International Inc. to acquire Dallas-

based Sterling Software Inc. took some Sterling users by surprise, but most are taking a wait-and-see stance.

"You can put me in the 'shocked' category," said Colt Johnson, director of technical support at J.Crew Inc. in

Lynchburg, Va. "It's CA. It's good; it's bad; it's the big fish eating another smaller fish."

Switching vendors, if not tools, is a familiar experience for the catalog retailer. Software it uses to link SNA and

TCP/IP systems came from Interlink Computer Sciences Inc., which was acquired by Sterling last March.

Overland Park, Kan.-based Universal Underwriters Group uses Sterling's Cool:Gen application development tools. "Other than the obligatory contract renegotiation, we don't expect sweeping changes," said R. G. Eaton, director of the solution support center at Universal Underwriters.

Users of tools from Islandia, N.Y.-based CA and Sterling could benefit from the merger, said Rich Ptak, an analyst at Hurwitz Group Inc. in Framingham, Mass.

"I just don't see any red flags for users on this," he said. "CA has a more complete product set [to offer Sterling users], while Sterling fills in some holes for CA."

Sterling and CA both tout storage, network management, application development and electronic-business tools, and analysts confirmed CA's claim that little overlap exists.

The CA development juggernaut will quickly integrate most of the tools.

"We want to get to CA World [the company's annual user conference in mid-April] with the integration done and the [applications] rockin' and rollin'," said Sanjay Kumar, CA's president and chief operating officer.

Look for integration of CA's neural network technology into Sterling tools, said Ron Wexler, an analyst at The Robert Frances Group in Westport, Conn. "Neugents are a key part of the CA strategy in whatever software" the company is developing or acquiring, he said. ▀

Online success

is never a guarantee, especially if you're trying to do all the heavy lifting yourself. How can you make your business an online powerhouse? How can you deploy applications quickly so you can focus on your core business? Simple. Pick an expert application service provider. One who delivers everything from high-availability Web hosting to complete Internet applications hosting, management and rentals. A company designed

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CA/Sterling Deal

BENEFITS FROM THE SALE

Storage users:

- Faster delivery of integrated SAN management software

SOURCE: RICHARD PTAK, HURWITZ GROUP

Sterling's federal users:

- Projects like air traffic control may gain from CA's 3-D visualization and neural net technology

SOURCE: PAUL MASON, IOC

CA's e-commerce users:

- Supply-chain maximization gained from portals built with Sterling's Eureka

SOURCE: RON WEXLER, ROBERT FRANCES GROUP

JUST ASK MICROSOFT

No one has more experience with Microsoft® Windows® 2000 than Compaq. Not only were Compaq products used in the development of Windows 2000, but as the only Worldwide Prime Integrator endorsed by Microsoft, we've already helped 80% of the corporations* who made the upgrade during beta testing. What's more, Compaq engineers were on site at Microsoft working to bring Windows 2000 on Compaq to even higher levels of availability and reliability. So when it comes to simplifying your transition, with more Microsoft Certified Windows 2000 specialists than anyone plus the best migration tools, we're not just the most experienced choice, we're perhaps the only choice. When you're ready for a Compaq NonStop™ eBusiness solution, contact us at www.compaq.com/windows2000.

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BRIEFS

EPA Shuts Internet Connection

The Environmental Protection Agency shut down its Internet connection last week after receiving word that its main computer systems were easily hacked into by investigators from the General Accounting Office. The vulnerability, if left unchecked, could cost hundreds of millions of dollars and expose trade secrets, the GAO said. Members of the House Commerce Committee made the incident public.

Win 2k Supports Enterprise Streaming

Microsoft Corp. has announced Windows Media Services for its Windows 2000 Server and Advanced Server. Designed to address corporate applications of streaming digital audio and video, Media Server can provide up to 9,000 concurrent video streams per server.

NSA Hires Andersen

The National Security Agency (NSA) has awarded to Andersen Consulting a one-year contract with four one-year renewal options, valued at \$13.8 million. Chicago-based Andersen will support and maintain information systems software for the NSA, the Defense Intelligence Agency and the National Imagery and Mapping Agency.

Mint Condition

The U.S. Mint announced online sales of \$26.5 million in the fourth quarter. The figure marks a 114% increase over third-quarter online sales from the mint's catalog, launched last April. The success is partly due to the rollout of the 50 state quarters, which is driving single-day sales past \$2 million.

New StorageTek Array

Storage Technology Corp. in Louisville, Colo., last week rolled out its 9500 Shared Virtual Array. The subsystem increases data availability, letting customers deploy applications more quickly, recover applications faster and simplify consolidated storage environments.

Electronic Billing Merger Should Benefit Billers, Banks

CheckFree to acquire TransPoint; analysts see consolidation of standards

BY MARIA TROMBLY

CHECKFREE Holdings Corp.'s \$1 billion bid last week to acquire its biggest rival, TransPoint, should make it easier for utilities, banks and other service providers to send and process their electronic bills by virtue of having one less standard to contend with.

According to an agreement signed last Tuesday, Atlanta-based First Data Corp., Microsoft Corp. and New York-based Citibank will sell TransPoint to CheckFree in exchange for 23% of CheckFree's stock. Norcross, Ga.-based CheckFree is the nation's largest electronic billing company, serving some 62 billers and 3 million consumers.

TransPoint, based in Redmond, Wash., is the second-largest electronic billing firm in the U.S., with only about half the number of CheckFree's clients. Customers of the two companies include AT&T Corp., MCI WorldCom Inc., GTE Corp. and Denver-based Qwest Communications International Inc.

Prior to the deal, billers "had to integrate each of the specifications" between CheckFree and TransPoint, said Jim Moran, co-founder and executive vice president of edocs Inc., a Natick, Mass.-based developer of billing software.

Converging Standards

In time, said Moran, those standards will converge and "make everyone's life a little easier on the back-office side."

However, consumers aren't likely to see any difference, he added. "Consumers are completely insulated from this," said Moran. "All of this standards information is way, way upstream — it has to do with how billers deliver their data to portals so consumers can come and retrieve it."

Still, the deal should eventu-

ally benefit both billers and consumers. For their part, billers will have a streamlined path to moving their paper online, provided the Department of Justice approves the plan, industry observers said.

The CheckFree/TransPoint deal "will enable the delivery of more bills over the Internet, faster and more efficiently," said Patrick J. Swanick, president and CEO of Cleveland-based Key Electronic Services.

As for consumers, said Swanick, the combination should simplify customer service "by allowing us to track billing and payment across a single infrastructure."

CheckFree CIO Steve Olsen

said there shouldn't be any technological problems as a result of the merger. He said both companies store their data in similar relational databases, which should be straightforward to integrate.

"The parts that are dissimilar are in the ways we integrate directly with the biller," he said. However, CheckFree will continue to support TransPoint's front-end systems for the next three years.

After the merger, which still needs to be approved by shareholders and the Justice Department, CheckFree will not only inherit TransPoint's clients, but also gain access to First Data's Western Union network of more than 82,000 locations in 176 countries.

In addition, CheckFree will gain access to TransPoint partner Intuit Inc., the Mountain

View, Calif.-based publisher of the popular Quicken personal finance software. ▀

CheckFree/TransPoint Deal

CheckFree

- Online billing and payment
- Two-thirds of all U.S. Automated Clearing House payments

TransPoint

- Online billing and payment
- Partner with Intuit Inc.

First Data Corp

- Credit-card and check processing and verification
- Western Union network

Microsoft

- MoneyCentral personal finance Web site

State Passes User-Opposed Software Law

Virginia first to pass contested UCITA

BY MARGRET JOHNSTON AND MITCH BETTS

Virginia's state legislature last week became the first in the nation to approve the Uniform Computer Information Transactions Act (UCITA), which establishes the rights of software buyers and sellers.

The controversial measure — opposed by major corporate user groups — covers licensing for shrink-wrapped software, vendor liability for defects and contract disputes.

UCITA was proposed as a model code for the 50 states by the National Conference of Commissioners on Uniform State Laws in July last year. And now it's being considered by several state legislatures.

Proponents such as the Washington-based Software &

Information Industry Association hailed Virginia's action, saying it will ultimately give businesses predictable and uniform software licenses, especially in e-commerce.

"Virginia took the first step in getting this patchwork of licensing laws in each of the different states to become a uniform set of laws that companies can then rely on across state lines," said Keith Kupferschmid, the trade group's intellectual property counsel.

The legislation is opposed by a coalition of librarians, consumer groups and businesses, including the Society for Information Management and the International Communications Association. The name of the anti-UCITA coalition is For a Competitive Information and Technology Economy, or 4Cite.

Skip Lockwood, the director of 4Cite, called the bill "dysfunctional" and said it runs roughshod over the rights of software buyers.

Critics say UCITA lets vendors disable software if they

believe the user has violated the contract. They also say it lets software vendors avoid liability for damage caused by known defects and prohibits the transfer of software from one company to another during a merger or acquisition.

The Virginia General Assembly delayed the effective date of the legislation until July 1, 2001. In the meantime, the state's Joint Commission on Technology and Science will review the measure.

The bill appears to have a good chance of becoming law in Virginia because Republican Gov. James Gilmore has expressed support for it.

Lockwood said legislators are being sold on the idea that the bill is needed to attract and keep jobs in the high-technology sector. But he said it had the potential to drive jobs away by stifling the software innovations of smaller companies. ▀

Reporter Linda Rosencrance contributed to this report. Johnston writes for the IDG News Service in Washington.

MORE THIS ISSUE

For more on UCITA, see Frankly Speaking, page 82.

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What do you need most?

Microsoft's BizTalk Slipping, But Still Winning Support

Tool kit lets developers write XML-based apps, but there's no server to support it yet

DOMINIQUE DECKMYN
AND CAROL SLIWA

MICROSOFT last week shipped a developer tool kit that will let customers start writing applications for its BizTalk Server. But a beta version of the platform, designed for Windows 2000, remains months away.

"[The tool] looks like it's pretty useful, but it'd be even more useful if there was an actual BizTalk Server out," said James Kobielus, an analyst at The Burton Group Corp. in Midvale, Utah. In fairness, Kobielus noted, "it's a complex undertaking" for Microsoft to split its existing product, Site Server Commerce Edition, into the business-to-business BizTalk Server and storefront Commerce Server 2000.

BizTalk, Microsoft Corp.'s XML-based platform for business-to-business e-commerce, was initially announced almost a year ago by company Chairman Bill Gates. So far, only an alpha version has appeared, according to Benoit Lheureux, research director at Stamford, Conn.-based Gartner Group Inc., who said it's just "a bunch of C++ libraries."

Microsoft did release the 1.0

version of BizTalk Framework, a set of guidelines from various vendors and industry groups for creating and exchanging XML documents. And last week, it rolled out the free BizTalk Jumpstart Tool Kit Version 2, which follows an earlier tool kit shipped in October.

The new tool kit includes support for Biztalk Framework 1.0. It will allow developers to start work on applications that will run on BizTalk Server.

However, the complete BizTalk software development kit isn't due until early spring, as part of a technical preview version of BizTalk Server 2000.

One of the reasons for the slip was the decision to add business process re-engineering tools to the product, said Chris Olson, group product manager at Microsoft. These tools won't be in the technical preview but will debut in a beta version this summer.

Business Engine Software

Corp. in San Francisco is working with early BizTalk code to develop an e-commerce application for managing the professional service supply chain. The application will go live as soon as BizTalk Server ships,

said marketing director Carl Amacker. "If you're waiting for the BizTalk Server to be released before you build your product, you'll be way behind the power curve," he said.

Despite the delays, Lheureux

called Microsoft's XML strategy "visionary," and said the company would still ship its XML product before IBM, Oracle Corp. and iPlanet (the Sun/Netscape Alliance) ship theirs. He said many small vendors already have similar products. "If you want to implement [XML] today, go to... someone who is shipping today," he said, citing Bluestone Software Inc., Extricity Software Inc., Netfish Technologies Inc. and WebMethods Inc. ▀

Developers Get a Peek at Visual Studio 7.0

Web-friendly plans warmly received

BY LEE COPELAND
SAN FRANCISCO

Microsoft Corp. laid out its long-awaited plans for a Web-friendly Visual Studio 7.0 last week and found a receptive audience among the developers at the Visual Basic Insiders Technical Summit here.

Microsoft aims to enable the software-development suite to create Web forms from Active Server Pages and add remote procedure calls for invoking Web services from other Web sites. It will also add code func-

tions to boost performance.

The tool set will ship by year's end, officials said.

Mark Driver, an analyst at Gartner Group Inc. in Stamford, Conn., said the planned enhancements to Visual Studio should make it easier for Visual Basic (VB) programmers to create better Web applications.

AT A GLANCE

What's New?

Visual Studio 7.0 includes:

- Web forms based on Active Server Pages
- Web services capability to invoke and expose programming functions
- Code inheritance and free threading improvements

He added that the new functions may help keep developers from moving to Java-based development tools, such as SilverStream Software Inc.'s Designer and Progress Software Corp.'s Apptivity.

Microsoft extended the life of VB several years, Driver said. "They avoided being labeled a legacy client/server tool."

Don Folsen, CIO at Art.com Inc., a subsidiary of Getty Images Inc. in Seattle, said the forthcoming Web forms will be easier to update and manage because HTML and VBScript will no longer be mixed together on the same form. "VBScript is a good tool, but when you have a large Web site with a lot of code and Active Server Pages, it's difficult to maintain it effectively, because script is all over the place," Folsen said.

With Visual Studio 7.0, Microsoft wants to give VB programmers the tools to move into Web development. "It's something that integrates well with our existing talents," said Rodney Bergren, technology coordinator at Des Moines Area Community College in Ankeny, Iowa. He said new capabilities will let developers without a great deal of technical skill create valuable Web applications.

The enhancements include support for free threading, code inheritance, overloading and polymorphism.

Eric Glover, a computer specialist at the Austin, Texas, office of the U.S. Department of Veteran Affairs, said adding inheritance — the ability of one class of objects to inherit properties from a higher class — is important. "VB does not have true inheritance; it just simulates it now," Glover said. ▀

Tools Part of Enterprise Play

BY LEE COPELAND

With its launch of Windows 2000, Microsoft Corp. last week unveiled its plans to better support Web development on that server platform in its Visual Studio 7.0 tool set.

Even as Microsoft makes a more credible play to enterprise application developers, its technologies still work best in Microsoft environments and with packaged applications, users and analysts said.

The next version of the popular tool set will include new Web form and services capabilities when it ships later this year. And the operating system itself contains features like Active Directory, which should make distributing and managing business objects easier.

Microsoft needs to offer the ability to develop more reli-

able large, distributed applications on its server operating system to help firms using the Web support application development, said Rob Enderle, an analyst at Giga Information Group Inc. in Cambridge, Mass.

"Everything is going to migrate to the Web sooner or later because of scalability, distribution of use and the thin-client aspects, so we need tools that will handle that," said Al Bradford, an information technology developer at SPX Corp., an industrial equipment maker in Muskegon, Mich.

Microsoft is also forging ties with dot-coms. Sound Dogs Inc., a sound-effects and production music company in Universal City, Calif., that operates an online sound library with more than 320GB of downloadable files, mainly relies on Mi-

crosoft to power its Web site and services. Rob Nokes, director of business development, said ease of use was the most important factor in choosing an all-Microsoft approach to add services to the site.

"If you're using Microsoft tools exclusively, it's going to get easier because Microsoft is working toward making their tools more user-friendly and useful for the Web, whereas if you are using a lot of different systems, it gets more complex," said Nathan King, IT integrator at Marathon Ashland Petroleum LLC in Findlay, Ohio.

But analyst Dan Kusnetzky at International Data Corp. cautioned against a single-vendor approach. "Users like [Windows NT] because it's reliable and robust. But it's still based on Microsoft [application programming interfaces] and Common Object Model architecture, which is still a single-vendor standard," he said. ▀

The Waiting Game

A year after it was announced, BizTalk Server isn't shipping.

Shipping today: Alpha version of BizTalk Server

Announced last week: BizTalk Jumpstart Tool Kit 2

Early spring: "Technical preview" of BizTalk Server, including complete software developer's kit

Summer: Full beta of BizTalk Server, including business process re-engineering tools

Early fall: BizTalk Server final version

SOURCE: MICROSOFT CORP.



Does the fact that technology keeps improving fascinate you?
Or frustrate you?

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Read on to see how
MCI WorldCom used
Voice over Frame
technology to help
an insurance company
save money.

It seems every three months there's a new "killer app." The media heralds it. Startups sell it. And you lie awake at night wondering if you should buy it.

Case in point. An insurance company was hearing a lot of good things about Voice over IP technology. About how it could help their branch offices communicate with their home office for a fraction of the cost.

When MCI WorldComSM assessed the situation, however, we noticed an interesting thing. They used IP for e-mail. But kept the lion's share of their mission critical data on Frame Relay. An important distinction. Because that meant they could use the spare bandwidth on their Frame Relay to carry voice. Maximizing their past investment. Minimizing their new one.

Needless to say, they took our advice. But then, they knew we didn't have a vested interest in selling them the latest technological wonder. Just the right one. For more information, simply visit us at www.wcom.com/data.

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Win 2k Bug Memo Causes Brief Uproar

Microsoft: 'Scan' a rally cry for quality

BY ANN HARRISON
AND DOMINIQUE DECKMYN

A LEAKED Microsoft Corp. memo about 63,000 "potential defects" in Windows 2000 caused a frenzy last week that at one point threatened to overshadow the operating system's launch.

But corporate users and analysts dismissed the report and said they believe Windows 2000 is stable.

An excerpt from the memo, sent by Windows development leader Marc Lucovsky, reads in part: "Our customers do not want us to sell them products with over 63,000 potential defects. They want those defects corrected. How many of you would spend \$500 on a piece of software with over 63,000 potential known defects?"

Keith White, director of Windows marketing at Microsoft, didn't dispute the au-

thenticity of the leaked document. But he said the memo was intended as a "motivational statement" for the Windows development team.

The basis for the surprisingly large number was an automated scan of the Windows 2000 source code with a tool

called Prefix, White said.

He said Prefix flagged code in Windows 2000 that could be made more efficient in the next release, detected false positives and analyzed 10 million lines of test code that weren't included in the release.

White likened running Prefix on code in Microsoft's development database to running a grammar-check tool on F. Scott Fitzgerald's classic *The Great Gatsby* — the tool may underline unfamiliar words, but that doesn't change the content of the novel.

Passing the Test

Laura DiDio, an analyst at Giga Information Group Inc. in Cambridge, Mass., said the output from Prefix definitely shouldn't be interpreted as a list of actual bugs.

"Microsoft can be arrogant, and they can be late, but one thing they are not is stupid," DiDio said. "And they would have to be extremely stupid to think they could get away with shipping a product with tens of thousands of bugs."

"Our tests indicate that Win-

Win 2k Security

Microsoft claims that Windows 2000 Active Directory integration will improve security with these features:

- IP Security encrypts traffic between systems
- Kerberos Version 5 protocol authenticates network communications, replacing Windows NT LAN Manager
- Public Key Infrastructure (PKI) combines public-key cryptography with digital certificates
- Certificate Mapping maps PKI certificate to user account, forming a bridge between PKI and Kerberos protocol

In the Big Leagues: SQL Server 2000

Microsoft announced strong benchmarks for its SQL Server 2000 database at the Windows 2000 launch, but the database won't even be seen until April, when a select group of users will be asked to beta-test it.

Two configurations of SQL Server running on the new Windows 2000 operating system beat out other common combinations of hardware platforms, operating systems and databases in a benchmark test posted by the Transaction Processing Performance Council in San Jose.

"As with all benchmarks, customers should be reminded they're never going to see these in the real world," said Terilyn Palanca, an analyst at Giga Information Group Inc. in Stamford, Conn.

The competition isn't standing still. Both Oracle Corp. and IBM have announced new features in their databases for Windows 2000. IBM said its DB2 Universal Database Version 6.1 is available for the Windows 2000 platform,

and Version 7.1, expected to be available midyear, will take full advantage of the new operating system. Oracle said Oracle8i Release 2 for the Windows 2000 platform will be available late next month.

Other highlights at the launch included the following:

■ Compaq Computer Corp. said it will resell Unisys Corp.'s 32-way Cellular MultiProcessing ES7000 system under its own ProLiant brand. The server will run Windows 2000 Datacenter Edition, scheduled to ship in June.

■ Unisys in Blue Bell, Pa., demonstrated a 16-way server employing an advance copy of Windows 2000 Datacenter Edition on Intel processors while running a low-airfare search application.

■ Sunnyvale, Calif.-based Amdahl Corp. will offer a range of Windows 2000 Directory Management services in collaboration with Ottawa-based FastLane Technologies Inc., a Microsoft Certified Service Provider. — Robin Robinson and Jaikumar Vijayan

dows 2000 Professional has a mean time to failure of over 300 calendar days," said Bob Lee, vice president of intranet and distributed technology at San Francisco-based Charles Schwab & Co., which has been testing the operating system for a companywide rollout

starting next quarter.

"Windows 2000 is a good, stable product," said Byrne Mulrooney, vice president of portfolio management at Plano, Texas-based Electronic Data Systems Corp. He said there's no reason for users to delay their Windows 2000 plans. ▀

Continued from page 1

Windows 2000

A crucial component of Microsoft's scalability strategy, the Windows 2000 Datacenter Edition, won't ship until the end of June. Microsoft announced a certification process to test and approve servers and other hardware to run with Datacenter Edition that hardware vendors said rigorously enforces a 99.9% uptime capability. While Windows 2000 Advanced Server will support eight-way multiprocessing and two-node clustering, Datacenter Edition will offer 32-way servers and clusters of as many as four nodes.

Henry Nash, director of development at Credit Suisse First Boston in London, said his company's main reason for considering Datacenter Edition is that the hardware and

operating system will be certified as a whole. Nash said he's less interested in support for more than eight processors because such servers will be in short supply. Initially, Unisys Corp.'s ES7000, which scales up to 32 processors, is expected to be the only platform that will run Datacenter Edition on more than eight processors.

Even Windows 2000 devotees are taking a careful approach toward Windows 2000 for back-end applications.

Jim McHale, director of information technology operations at Stride Rite Corp. in Lexington, Mass., said his company has already moved all of its 1,100 desktops and file-and-print servers to Windows 2000. He said it has been a great benefit to reduce his three front-end operating systems — Windows 95, Windows NT and NetWare 4 — to one. But the shoemaking company's back-end services still run on

RS/6000 and AS/400 machines from IBM. "Only time will tell whether [Windows 2000] is sufficiently scalable," he said.

Bob Lee, vice president of intranet and distributed technology at San Francisco-based Charles Schwab & Co., voiced similar skepticism. "Schwab isn't considering replacing our Unix-based Web servers, but as with all new technology, we will examine Windows 2000 to determine if it might be appropriate for future data center applications," Lee said.

"This is where Microsoft will be hardest pressed to erode a market," said Laura DiDio, an analyst at Giga Information Group Inc. in Cambridge, Mass. "No matter what they say, they're still playing catch-up with Unix."

Another factor holding back Windows 2000 is limited software availability. Despite a list of 8,000 applications that are "ready" to run on the new op-

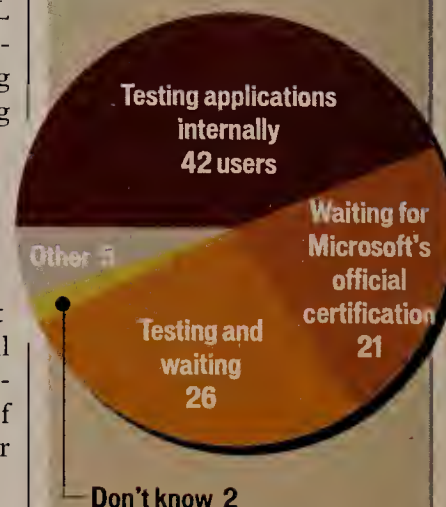
erating system, very few applications actually use its new features. Only four server applications and 24 desktop applications passed the Windows 2000 certification process in time for the launch.

Gates delivered a list of Microsoft products that will ship this year, including the SQL Server 2000 database, Microsoft Exchange 2000 messaging server and the upcoming XML-based electronic-business server BizTalk Server 2000. Microsoft isn't saying when BackOffice 2000 will ship. It has released a BackOffice Server 4.5 Readiness Kit for Windows 2000, which will allow most BackOffice components — with the exception of Systems Management Server — to run on Windows 2000.

But the lack of applications is "not going to be a deal breaker," said DiDio, since relatively few companies are planning to migrate their servers this year. ▀

Ensuring Compatibility

Ways users are ensuring that applications will run on Windows 2000:



Base: Survey of 96 Microsoft operating system users

SOURCE: COMPUTERWORLD RESEARCH

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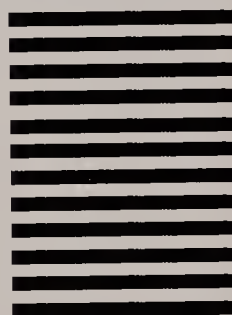
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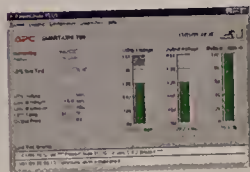
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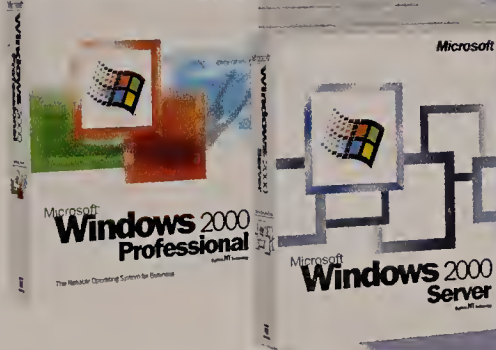
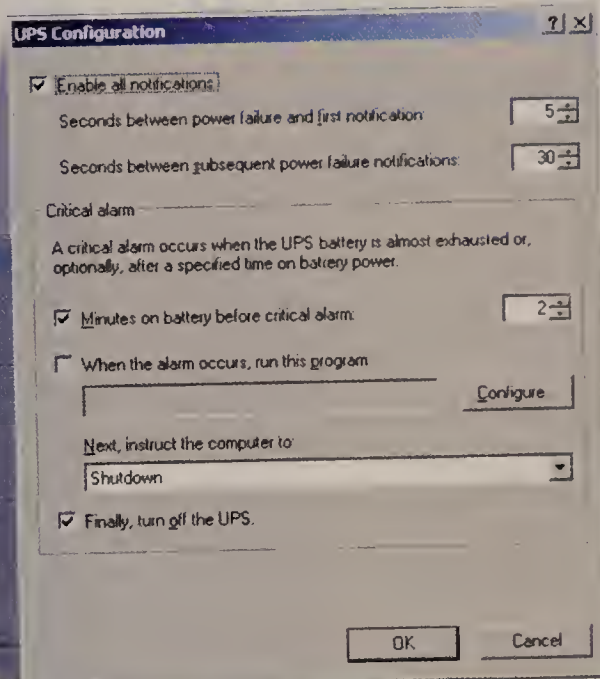
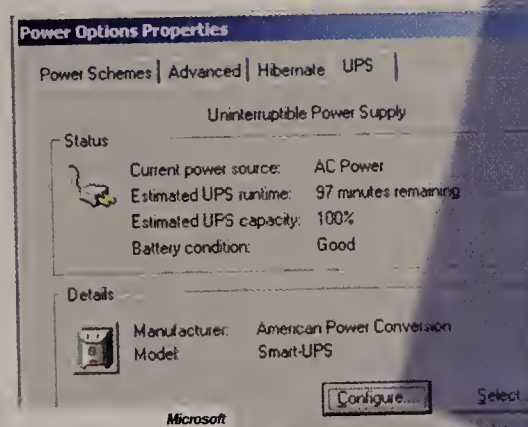
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Satellites Will Change E-Commerce Landscape

GPS devices will let marketers lure nearby customers, but privacy is an issue

BY PATRICK THIBODEAU

THE OLD ADAGE of real estate — location, location, location — is becoming important in e-commerce, too.

Satellite-based location technology that is capable of finding people on foot or in vehicles will soon change the way many companies interact with their customers.

It could revolutionize Web retailing by allowing stores, hotels and restaurants to identify nearby customers and lure them inside with advertising and coupons.

John Paul Nichols, president and CEO of Wingate Inns International Inc., is among those preparing for the day when location-tracking systems are widely used in cellular phones, personal digital assistants and vehicles, so Wingate will be able to offer personalized services such as directions and on-the-fly reservations.

Finding Coffee on the Road

The devices, which will likely rely on the government's satellite-based Global Positioning System (GPS), could also steer a potential customer to a good cup of coffee.

"I certainly see a time when a customer will browse to our Web site via their GPS-enabled communications device and ask for directions to the nearest location where they can get a cup of Green Mountain coffee," said Jim Prevo, CIO at Green Mountain Coffee Inc. in Waterbury, Vt.

"Ultimately, they could set up a preference on their auto navigation system to alert them when they are within 100 yards of an establishment" that sells coffee, he said.

But getting to that point won't be easy, Nichols said.

"Right now, there is no common platform, and you have a

variety of different approaches to this," Nichols said. He said he worries that his Parsippany, N.J.-based hotel chain will make investments in technology "that can change next year."

Moreover, it remains to be seen whether consumers will want marketers to be able to track them or whether they will view that capability as a privacy invasion.

Despite the uncertainties, analysts said companies have no choice but to prepare to offer location-specific services to mobile customers. The market potential may be in the billions of dollars.

GPS devices that provide basic tracking and mapping information have been available for years. But the technology will soon allow companies to routinely tie location information to their databases, "so if you are looking for the next McDonald's, you know where it is and you get directions to get there," said Mark Zohar, an analyst at Forrester Research Inc. in Cambridge, Mass.

This e-commerce market is still two years away, Zohar said, but businesses "should be thinking about working with some of the content and technology providers to ensure they are included in mobile yellow pages and content databases" that supply data to GPS devices.

A number of trends are driving the move to location-specific marketing. Automakers are moving aggressively to install GPS systems that are linked with wireless voice communications, Internet access and onboard computers. General Motors Corp. in Detroit expects to install 1 million of its OnStar GPS-enabled systems in vehicles this year.

Plus, the Federal Communications Commission (FCC) is requiring telecommunications carriers to develop systems for

tracking cell phones so they can locate people in emergencies and help police catch suspects. But these same systems can deliver e-commerce services.

The systems will eventually allow a business to send electronic coupons directly to a consumer's cell phone or vehicle as the customer nears the store. The hook to get consumers to sign up to receive these potentially annoying advertisements will be free or reduced equipment and service charges, analysts said.

But for businesses, "the real challenge becomes, 'How do we tie a database of inventory and sales to a database of users controlled by the carrier, in order to target users based on location and past purchasing history?'" said Jason Pavona, who heads wireless strategies at Web portal firm Lycos Inc. in Waltham, Mass.

There also are regulatory issues. Privacy groups are challenging some of the FCC's location-tracking mandates in federal court. "It comes down to a question of who is going to have control over whether location

JUST THE FACTS

What Is GPS?

What it is: The U.S. government operates 24 Global Positioning System (GPS) satellites.

How it works: Users receive signals from satellites that send location and timing information to allow receivers to triangulate their position.

How accurate it is: GPS determines the receiver's position to within 10 to 100 meters.

Who runs it: The U.S. Department of Defense runs the system, which became fully operational in 1995.

What are the alternatives: Telecommunications carriers are considering "network solutions" that triangulate cell phone signals between two handsets and an end user. The time it takes a signal to reach base stations can be used to mark location. Analysts say telephone carriers will use GPS and network solutions to comply with a Federal Communications Commission mandate requiring that they be able to locate two-thirds of their subscribers to within 125 meters by 2002.



JOHN PAUL NICHOLS, president and CEO of Wingate Inns, says he fears that technology for GPS-based marketing will change a lot

information is transmitted," said David Sobel, general counsel at the Electronic Privacy Information Center in Washington. "If what we [were] talking about [was] putting on handsets a little button that said 'Find me' that the user could activate — I think that would alleviate a lot of concerns."

While e-commerce companies sort out technical and regulatory issues, other companies are already deploying GPS technology to track assets.

Paul Mueller, vice president of communications technology services at Schneider National Inc., said his Green Bay, Wis.-based trucking company has begun using GPS technology to track its 43,000 trailers. Location devices in the trailers are coupled with sensors that can also tell whether a trailer is carrying cargo or whether its doors are closed.

Jeff Durfee, information systems manager at Milton J. Wood Co., a Jacksonville, Fla.-based construction company, said he would like to give GPS devices to service technicians. He said he would also like to put GPS devices on heavy equipment to help determine which equipment or service technicians are in the best position to be dispatched to a customer's location.

But there are drawbacks. Durfee said vendors aren't producing GPS devices that are rugged enough, and "hardening" them is expensive.

Cost is another factor. Prices on GPS location devices are falling rapidly — systems that cost \$400 or more several

years ago cost less than \$200 today — but the cost/benefit ratio still seems high to some.

American Freightways Corp. tried using GPS systems and rejected them because of the cost of outfitting its 7,000-truck fleet and building interfaces with its systems, said Frank White, vice president of systems operations at the Harrison, Ark.-based company.

American Freightways already has a sophisticated system for determining a vehicle's whereabouts, including on-board computers and radio frequency tags that tell the company when a driver has left a dock. Dispatchers usually know where a truck is to within 100 miles. "We can tell you where a shipment is with just about as fine a granularity as we think a customer would ever want," White said.

Service Improvements Cited

Emery Worldwide is considering putting GPS receivers in some of its high-value shipments to be able to continuously track a particular customer's order. That move would improve customer service, and "employees wouldn't have to go to two or three different systems to pinpoint a shipment," said Ron Berger, director of information technology at the Redwood City, Calif.-based freight company.

But the cost of these devices, along with communication charges, "is going to be the real driver on how prolific something like this gets deployed," Berger said.

Location-tracking technology also creates potential Big Brother issues for employers. But IT managers in the transportation industry, who have the most experience with tracking systems, claimed that most employees welcome it.

If a vehicle breaks down in the middle of a desert, the driver knows he can get help, said George Brooks, vice president of research and development at J. B. Hunt Transport Services Inc. The Lowell, Ark., company operates some 8,500 trucks. "I think that the benefit outweighs any kind of irritant to the driver," he said. ▀

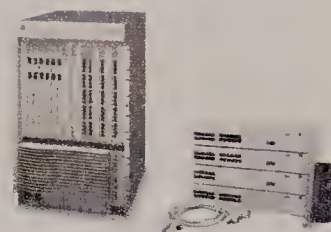
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Deja Vu Y2k? Stock Decimalization Looms

Wall Street execs worry new price quoting system means great expense and risk

BY MARIA TROMBLY

FINANCIAL companies are characterizing the decimalization of the stock market as "Y2k all over again" for the expense, time, risk and creative accounting it's likely to incur. And some agree that an expected increase in stock market transactions will be just as challenging.

The Securities and Exchange Commission this month ordered U.S. stock markets to begin quoting prices in 5-cent increments — in decimals rather than fractions — after July 3, followed by 1-cent increments at some later point not yet determined.

Gearing up for the change will require altering software to accept decimals and bulking up for a surge in volume that will result from the pricing.

"This could be a much bigger task for us than Y2k," said Dexter Tong, senior vice president at ABN Amro Bank, which has already set up a task force to deal with decimalization. He said he didn't have any cost estimates.

Girding for More Traffic

Tong said the problem isn't in simply rewriting the computer code. "I don't believe that would be an issue; that's fairly straightforward," he said. Rather, the bulk of the effort

will need to be put into gearing up for higher volumes of stock quotes and messaging traffic that will result from more variations in stock prices.

Scott Abbey, chairman of the Securities Industry Association's (SIA) decimalization committee, confirmed that the switch to decimal pricing is mostly complete. However, it will take most of the rest of this year to increase the capacity of the infrastructure to meet expected demand, said Abbey.

Indeed, "the reality hasn't really set in for a lot of folks yet," said Tong.

The costs of converting to decimal pricing could reach \$1 billion for the broker-dealer community alone, said Abbey, citing a recent survey of SIA members.

"In addition, all the exchanges will also have to spend

a significant amount of money," said Abbey.

By comparison, Y2k preparations cost the industry more than \$5 billion over the course of more than three years.

But Mike McEvoy, Tower-Group's director of benchmarking, warned that these es-

timates might be exaggerated because organizations may attribute a variety of costs to decimalization. "It's going to be like Y2k," he said. "They're including expenditures that would have occurred anyway, like system upgrades and general maintenance work." ▀

Y2k Patent Owner Still Wants Fees

Hundreds of firms may owe for fixes

BY CHRISTINE MCGEEVER

His first move was to patent a popular Y2k software patch that has been around for decades. Then he asked hundreds of corporations to pay him for the privilege of using the patch.

Now, while the U.S. Patent and Trademark Office reconsiders its award of the patent, he's back with a partner and has more patents to license.

Bruce Dickens is joining forces with the patent holder of another Y2k fix, Tom Soeder. The resulting partnership, Dickens-Soeder2000 LLC in Laguna Beach, Calif., will own and license patents held by both Dickens and Soeder and will continue to pursue payments from Fortune 500 companies that they assume used the techniques as part of Y2k remediation efforts.

Dickens and his attorneys declined to say what they will charge for the licenses. But they confirmed that the license structure for the Dickens patent was up-front payment of .0025% of the company's 1999 revenue, with monthly payments calculated as a declining percentage of revenue.

Windowing is reportedly the most popular of several software techniques for accurately interpreting data entered in double-digit year fields. In November, *Computerworld* re-

ported that among commercial software applications, about 80%, including Microsoft Corp.'s Office and Intuit Inc.'s Quicken, implemented the technique as early as 1995.

Soeder has three patents pertaining to a technique for encoding and compressing date data to represent four-character dates in database fields formatted for two-character dates. Called "packing," it was implemented in less than 2% of patch efforts, according to Kazim Isfahani, an analyst at Giga Information Group Inc. in Norwalk, Conn.

Analysts said the requests, issued in a form letter sent to approximately 700 companies, have been met with ambivalence because the patent's legitimacy isn't established.

In December, the U.S. Patent Office said it would re-examine the patent, but a time frame for the process isn't set.

Dickens hasn't confirmed that any of the companies targeted used the technique he patented.

Marc Pearl, general counsel for the Information Technology Association of America in Washington, said it's unlikely any of the companies that received a payment request have engaged in an agreement or plan to do so, at least until the patent's status is confirmed.

Pearl said companies that have received a letter from Dickens or the partnership should research whether the fixes in question were used.

Dickens and attorneys William Cray and William Levin of Levin & Hawes in Laguna Beach, Calif., said they believe most companies — except those that rewrote software — used the techniques.

Neither Cray, Levin nor Dickens would say how many companies or which ones responded to the request. ▀

ASPs Gear Up for Turf Wars In E-Mail Hosting Arena

BY LEE COPELAND

The next turf war in the messaging market won't be among companies trying to sell extensive on-site e-mail systems, analysts said.

The brewing brouhaha is among application service providers (ASP) who want to host the Exchange networks of big clients, they said.

United Messaging Inc. last week unveiled outsourced e-mail services for Microsoft Corp.'s Exchange Server 5.5. The West Chester, Pa.-based company also plans to support Exchange2000 after it ships this summer.

United Messaging said its offering, called Microsoft Exchange Mailbox Service, will include implementation, administration and management for the messaging hardware and software infrastructure.

Pricing starts at \$12.50 per month per mailbox.

Nina Burns, president of Creative Networks Inc. in Palo Alto, Calif., said smaller companies are looking to cut costs

by outsourcing e-mail to external service providers instead of implementing and maintaining messaging servers.

"The push to outsourced mail will begin with small and medium-size companies, then move to enterprises with special requirements, like remote users, traveling sales forces, satellite offices and that kind of thing," said Burns.

Jim Maguire, CIO at Centocor Inc. in Malvern, Pa., said he's evaluating a move to outsourced mail for the drug manufacturer's 2,000 e-mail users

in order to avoid having to hire a full-time mail administrator.

"It's difficult to acquire and maintain staff for a big mail system," said Maguire. We aren't big enough to have critical mass in e-mail, so we would hire someone that would stay a couple months then leave."

United Messaging officials said the company will focus on organizations with fewer than 5,000 e-mail users.

Boom Expected

Jeanne Schaaf, an analyst at Forrester Research Inc. in Cambridge, Mass., said she expects the hosted application market to boom.

"Hosted applications are breaking into a new market," said Schaaf. "The applications are not new, ... but the ASPs are taking business applications downmarket to small and [medium-size firms]. They're getting the same applications that large companies buy the license for but are being charged per application and on a monthly basis."

Forrester predicts the application hosting market will reach \$11.3 billion by 2003, a dramatic increase from the \$900 million in revenue attributed to that market last year. ▀

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Outsourced Messaging Advantages

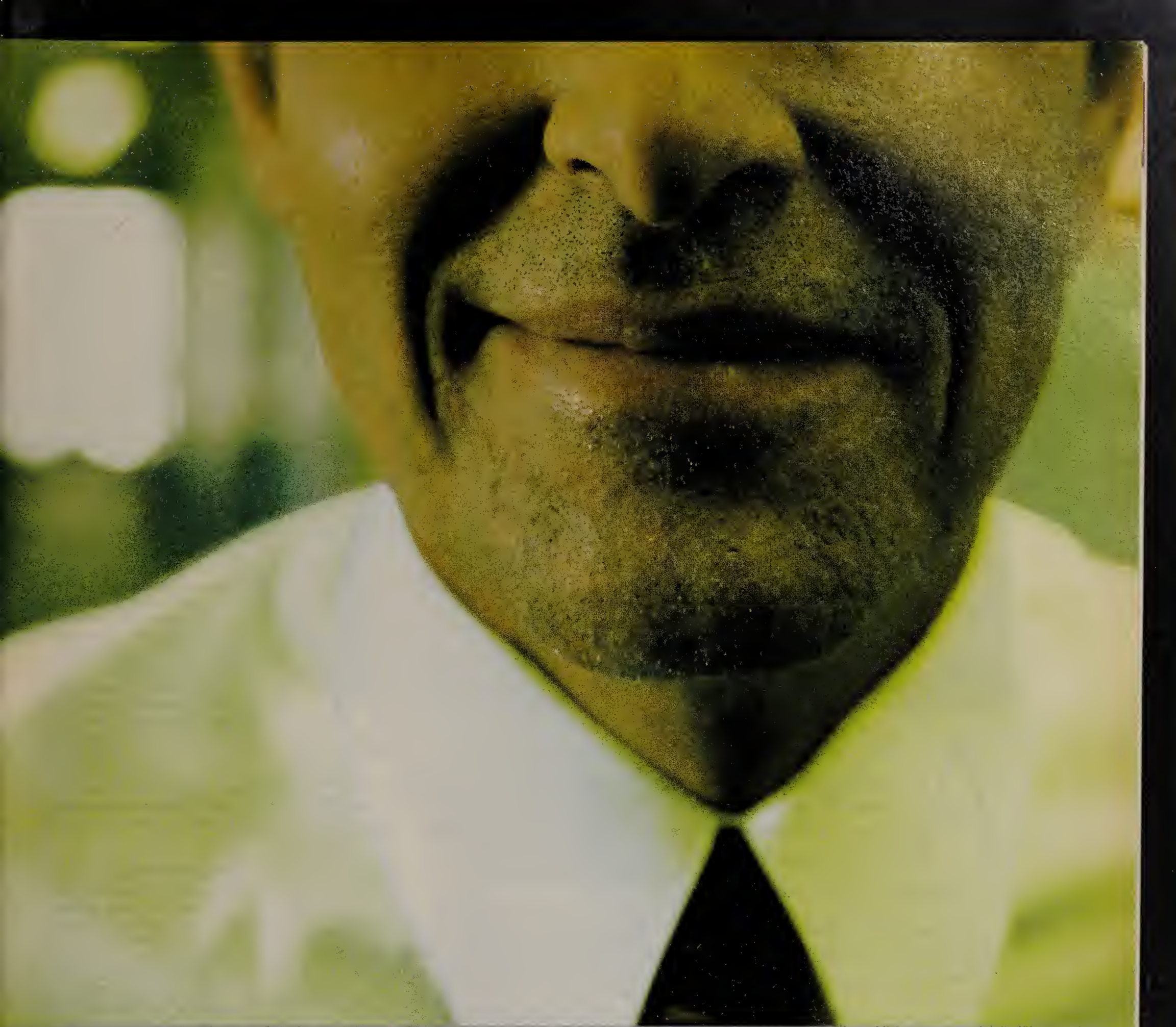
- Eliminates the need to hire an in-house messaging administrator
- Hardware and software updates and maintenance can be handled off-site
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Windowing License

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BUSINESS WITHOUT INTERRUPTION: VERITAS

IBM Winning Over Sequent NUMA Users

BY MARK HALL
SAN ANTONIO

IBM needn't fear that its customers for Non-Uniform

Memory Access (NUMA) servers will run to the battlements shouting "Remember Sequent!" in rebellion. In fact,

those gathered at the meeting for former Sequent users here, barely a block from the Alamo, seem quite satisfied that IBM's

acquisition of scalable server maker Sequent Computer Corp. has improved their information technology operations.

"We were really concerned when we learned that IBM was buying Sequent," said Rosa

Hobleman, end-user support and operations manager at the Orange County Superior Court in Santa Ana, Calif. "But the only difference we see is with their business cards." She said the acquisition helped the court add to its NUMA server farm when it recently purchased an RS/6000 system because her reseller could leverage its IBM connections for delivery and service.

At Omaha-based hotel, restaurant and cruise ship firm Carlson Hospitality Worldwide, a Sequent customer since 1988, there was similar anxiety. Tom Sikyta, senior director of technical services, said he was worried about IBM's commitment to service because the company is so large. But the past five months have eased his mind.

"IBM might even bring some cost benefits to us" with more aggressive pricing on NUMA-Q servers, Sikyta said.

Kelly Smith, manager of systems administration at document management firm Lanier Worldwide Inc. in Atlanta, said he had concerns as well. But he said that by tacking IBM's logo on NUMA products, the systems have been able to attract broader independent software vendor support.

New Servers Unveiled

In addition to third-party products, IBM last week unveiled three new ones for its NUMA server line. The company announced here that its DB2 Universal Database will be available on the Intel-based NUMA-Q servers. It will include a DB2 software developer's kit, a runtime client and DB2 Connect, which will link NUMA-Q servers running DB2 with databases on OS/390 mainframes.

IBM also said its Shark enterprise storage systems will work with NUMA-Q servers for handling online data storage requirements up to 500 terabytes. It also announced NUMACenter Director, a Web-based console that provides a single way to manage Unix and Windows NT and 2000 servers.

David Pendery, an analyst at Illuminata Inc. in Nashua, N.H., said IBM is "a scaling company" and offers products for IT businesses with all levels of skill, which is why the Sequent purchase was so important. "They needed a big-time Intel server to round out their offerings," he said. ▀

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WHAT'S THE
VALUE OF
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AN OPERATING SYSTEM IS ONLY AS GOOD AS THE APPLICATIONS IT SUPPORTS, AND vice versa. These days, the IT world's attention is riveted on the new Microsoft® Windows® 2000 operating system. Several applications already carry the Certified for Windows 2000 logo.

What exactly does this certification mean?

In brief, it means that the applications have passed one of the most rigorous certification processes ever devised. Certified applications are optimized to make life better for IT, while lowering the total cost of ownership for the organizations that use them.

Watch for a special supplement next week in *Computerworld*, titled "The Business Value Of Certified Applications," which details the process and promise of Windows 2000 certification. You'll learn that:

- ▶ The new certification specification has been drafted by a team including high-ranking IT managers from major user organizations.
- ▶ The Certified for Windows 2000 logo is explicit proof that the certified application will exploit the rich features of the operating system to the fullest.
- ▶ Independent software vendors who have successfully completed the certification process can link the results to specific user benefits.

**Don't miss "The Business Value
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next week in *Computerworld*.**

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BRIEFS

HP Sales Rise 14%

Hewlett-Packard Co. posted first-quarter revenue of \$11.7 billion, up 14% from the same quarter last year. Net income for the quarter, ended Jan. 31, was \$794 million, down from \$882 million in the same period last year.

The results include charges related to HP's spin-off of testing equipment division Agilent Technologies Inc. in Palo Alto, Calif. Those charges will be calculated when the spin-off is complete, HP said. It said its computer business grew 15% for the quarter in year-over-year terms.

Nortel Boosts Stake In Optical Networking

Nortel Networks Corp., which analysts say is the market leader in optical networking, said it will invest \$260 million in its optical networking business. Nortel had already said in November that it would invest \$400 million in the technology. The Brampton, Ontario, company said the total would be used to triple production of optical networking components this year.

Nortel's optical network systems employ Dense Wavelength Division Multiplexing, a technology that increases the amount of data traffic that can ride on individual fibers.

Symbol Results Soar; Intel Invests \$100M

Symbol Technologies Inc., a maker of wireless networking appliances and bar-code scanners, posted fourth-quarter profits of \$33.5 million on \$312.5 million in revenue, a jump of 35% over the same period last year. The Holtsville, N.Y.-based company also signed a deal for Intel Corp. to invest \$100 million in the development of its high-speed wireless LAN technologies.

Compuware Buys Web Developer

Compuware Corp. in Farmington Hills, Mich., said it acquired private Web development firm BlairLake Inc. in New York under terms that weren't disclosed. The company said the move will advance its e-commerce strategy.

Vendors Scramble in a Fractured CRM Market

Customers must sift through array of tools in sales, service and marketing automation

BY ROBIN ROBINSON

CUSTOMER relationship management (CRM) may refer to a company's integrated approach in presenting itself to its customers, but there's nothing integrated about the current state of the field.

No single vendor provides integrated components in the three key areas of sales, service and marketing automation, according to several analysts, who admit to resorting to elaborate lists to keep vendors straight.

"The sales force automation segment grew 90% last year, and the panoply, the overall CRM space, has been growing 100% per year. That is not a mature industry," said analyst Bob Austrian at Bank of America Securities LLC in San Francisco.

Siebel Systems Inc. in San Mateo, Calif., may offer the

broadest coverage. Formed in the early '90s to sell and implement a sales force automation package, it branched into call center management by buying Scopus Technology Inc. in early 1998. Last month, Siebel bought database marketer Paragren Technologies Inc.

Siebel executives said they expect Paragren's applications to be integrated into their product by its next release, due this summer.

Following Scopus's lead, call center management players such as Clarify Inc. in San Jose and Vantive Corp. in Santa Clara, Calif., found that to survive, they also needed to be purchased by bigger fish, said Judy Hodges, an analyst at International Data Corp. in Framingham, Mass. Telecommunications giant Nortel Networks Corp. in Brampton, Ontario, bought Clarify last year,

while Vantive was scooped up by enterprise resource planning (ERP) vendor PeopleSoft Inc. in Pleasanton, Calif. PeopleSoft, like other ERP vendors, is looking to roll CRM capabilities into its software.

Marketing automation companies typically focus on marketing campaign management or content management. These include Paragren and two Boston-based companies, Exchange Applications and Prime Response Group Inc., all of which are considered mature because they have exist-

ed for more than five years.

Some marketing automation companies strictly offer Web-based campaign management and have limited predictive modeling. Others, such as E.piphany Inc. in San Mateo, Calif., and Broadbase Software Inc. in Menlo Park, Calif., offer analysis applications that ride on data marts and are trying to buy or build their way into managing all aspects of a marketing campaign.

Like the vendors themselves, market expectations are all over the map. Gartner Group Inc. in Stamford, Conn., for example, pegs the overall CRM market at \$40 billion in 2004, while Forrester Research Inc. in Cambridge, Mass., estimates the overall market will be \$3 billion to \$4 billion within the next couple of years. ▀

CRM Vendors

These companies describe some of their offerings as customer relationship management applications:

ERP: Baan, SAP, PeopleSoft, Oracle, J. D. Edwards

Front-office: Siebel, Clarify, Vantive, Onyx, Pivotal

External service providers: PricewaterhouseCoopers, KPMG, Andersen Consulting, Cambridge Technology Partners

Supply-chain management: i2, BroadVision, Aspect Dev.

Hardware: Hewlett-Packard, Sun Microsystems

Cabletron Spins Itself Into Four Companies

IPOs planned for new service units

BY JAMES COPE

Networking vendor Cabletron Systems Inc. is hoping to reinvent itself by creating four separate companies.

Analysts had said that the Rochester, N.H., vendor had moved to second-tier status as a network equipment provider.

On Feb. 10, Cabletron announced that the four companies, to be set up along product and service segments, would initially operate under a Cabletron umbrella. But Cabletron officials said the plan is to launch initial public stock offerings for the new companies, which will operate under the following names:

■ Riverstone Networks in Santa Clara, Calif., will cater to

the Internet service provider market.

■ Enterasys Networks in Rochester, N.H., will serve enterprise networking users.

■ Global Network Technology Services, also in Rochester, will be a network and systems consulting company.

■ Aprisma Management Systems in Durham, N.H., will be a developer of network management software.

Jim Slaby, an analyst at Giga Information Group Inc. in Cambridge, Mass., characterized Cabletron's move as a bold step as far as the stock market

is concerned. But overall, he said, he's skeptical the move will help Cabletron customers get better sales and service.

Analyst Michael Speyer at The Yankee Group in Boston was more positive. "It's a good way to breathe life into a company that had the image of being very enterprise-oriented," said Speyer. "Most of their customers will fall into one of the new operating groups." ▀

Intel Patent Challenged

BY TERHO UIMONEN

Taiwan chip maker Via Technologies Inc. has filed papers asking a U.K. court to recognize that the company hasn't infringed upon a computer processor patent owned by Intel Corp. Via also claims that Intel's patent is invalid.

In a Feb. 14 filing with the Patents Court of the Chancery Division of the High Court of Justice in London, Via said it hasn't infringed upon Intel's snoop timing-related patent.

The London court filing was the latest move in an ongoing legal battle between the two companies.

In late October, Intel filed suits against Via, as well as a few of its customers in California, Singapore and the U.K., claiming that certain Via PC chip sets had violated patents

related to its P6 bus technology. The P6 bus is used in PCs featuring Intel's flagship Pentium III processors as well as entry-level Celeron chips.

Via said those claims are without merit.

Last month, Intel upped the stakes in the patent spat by requesting that the U.S. International Trade Commission bar imports of Via's chip sets and related products to the U.S. ▀

Uimonen writes for the IDG News Service in Stockholm.



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MARYFRAN JOHNSON

Not-dot kids

STEP RIGHT UP AND MEET your company's future workforce, the newest IT people on the job. They're twentysomethings seeking diverse assignments and creative challenges. They like working in small, informal teams, the kind that inspire people to yell questions across the room to one

another. They're looking for a little freedom and a ton of responsibility.

"Oh," you're thinking, "I know where they work these days. They're swirling around in that dot-com drainpipe that's sucking away such great talent from the old standbys like my company." Wrong. Delightfully wrong. Feel free to fling this editorial aside and go straight to our business section — page 38 in this issue — where you can read part two of Kathleen Melymuka's eye-opening stories on the "New Kids" of IT.

Our reporter talked at length with 15 young IT professionals at the beginning of their careers, delving into why they chose established, traditional companies to launch their work lives. Read what they said about what they want from work, and how they're finding it far from Silicon Valley-style start-ups, at places like Kraft Foods in Northbrook, Ill., Monsanto in St. Louis and Caterpillar in Peoria, Ill.

Yes, Peoria.

They're seeking to balance their lives, rather than to become slaves to their stock



MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at maryfran.johnson@computerworld.com.

options. They're looking to traditional firms to show them how business really works, to pair them up with expert technologists for a little career nurturing and eventually to pay for their MBAs. They're smart enough to know what they don't know. (I can't wait for my teen-agers to reach this stage!) If the companies they work for now don't have a dot-com strategy in development, guess who will stand up and volunteer some advice?



Speaking of dot-com advice, I asked for some two weeks ago in this space, wondering what we could call established companies instead of applying the clumpy "bricks-and-mortar" label. About two dozen of you kindly responded with some fine suggestions, such as "analog," "off-lines," "solids" (with a nod to *Star Trek: Deep Space Nine* and Constable Odo), "3D-coms," "heartland shops," "profitables" and "non-coms" (a special favorite with ex-Marines). "Dot-inks" was my favorite (betraying my publishing roots), but "not-dots" was definitely the cutest. Let's see what catches on. ▀

ALAN PALLER

Web site attacks offer hard lesson: Tighten security

THIS MONTH'S Web site attacks, which knocked out Yahoo, CNN.com and Amazon.com, among others, are part of a new wave of cyberspace assaults that point up the need for tighter security.

The attacks — and others like them — prove there's no safety on the Net as long as careless people connect loosely managed systems. Extortion demands saying "Pay up or your site will stop working" are on the horizon.

But these weren't the first distributed denial-of-service attacks. News organizations jumped on the story in the wake of the assaults two weeks ago. But what they didn't report was that the same type of attacks had already occurred and caused outages at financial institutions, a network hardware company and a huge telecommunications company. Collateral damage also brought down the computers in the operating room of a Seattle hospital. These attacks weren't made public because the executives at those organizations, afraid of negative publicity, kept the information from the press.



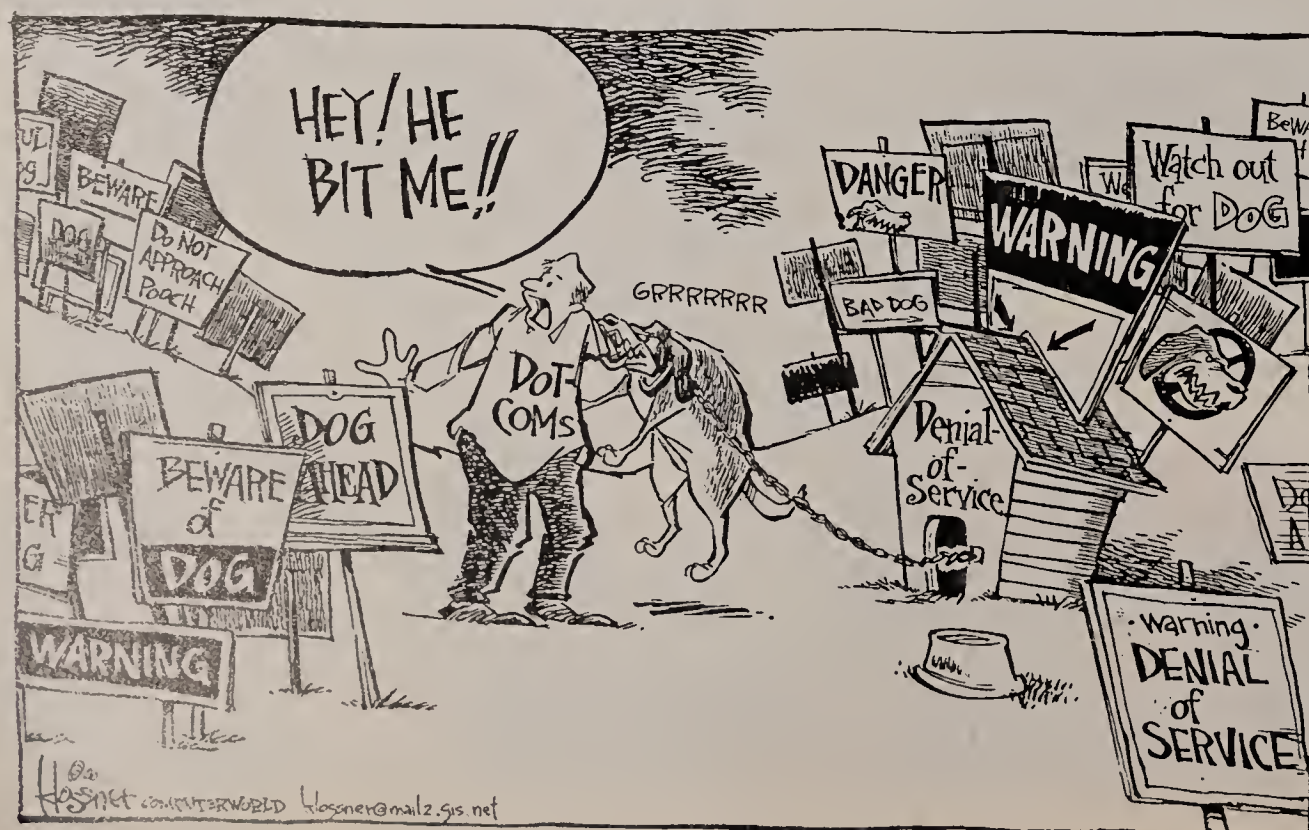
ALAN PALLER is director of research at the SANS Institute in Bethesda, Md. You can contact him at paller@sans.org.

There's no solid defense against these attacks. If someone singles you out, you stop operating. So what should the e-commerce community do about it?

Four sets of actions will turn the tide.

First, users and Internet service providers should apply a four-pronged approach. One, they should block deliberately misaddressed packets. Two, they can try to block broadcast-address processing, a technical action that stops attackers from hiding the identities of the machines from which they launch attacks. Three, users and providers should use firewalls with "deny all/allow some" rules — as opposed to current "allow all/deny some" rules — which will cause traffic to be stopped unless it fits known patterns. And four, they can apply security patches to operating systems and applications. Today, most organizations install software and never check to see whether security patches have been made available.

Second, users, auditors and executives should insist that their systems be managed by people



with certified information-security skills. Allowing uncertified people to manage Internet-connected systems is like allowing unlicensed electricians to wire houses.

Third, apply hardening scripts (programs that turn off unnecessary services and close known holes) to every system connected to the Internet and remove all nonhardened systems from the Net until they're protected. Sun Microsystems users have taken the lead in creating hardening scripts, with the active help of Sun itself. Linux users are also making progress. Sadly, other operating system software vendors are far behind.

Finally, we must stop accepting the excuse of "There's nothing worth protecting on my systems." Maybe there's no critical data there, but a system connected to the Internet is a loaded weapon, and it shouldn't be left out where criminals can use it to attack others. ▀

JOHN ZEHR

Domain name speculation doesn't merit bad image

IN 1626, Peter Minuit traded some useful but inexpensive household items for what would become one of the most valuable pieces of real estate in the world — Manhattan. Two centuries later, the California Gold Rush lured thousands of starry-eyed prospectors to the Sierra Nevada. Today's gold rush centers on Internet "real estate." Hungry cyberspeculators are staking their claims, hoping to strike pay dirt in a domain name.



JOHN ZEHR is the owner of NameZebra.com. He creates unique and brandable domain names and identities for businesses. His Web site is www.namezebra.com.

The Internet, once the province of researchers and the military, is now recognized as the medium for much of our future commerce. Domain name investors are combing the Net for a marketable piece of real estate, hoping it will become the next Manhattan.

Are there any good names left, or have they all been scarfed up by greedy Internet "squatters?" Good names are becoming an endangered species, but they can be found. I recently registered audiorecordings.com, bestsecretaries.com, goldforecast.com and madiera.com, and I'll soon resell them for a handsome profit.

So what's the problem? For me, the problem was that I crossed the line that distinguished a

"domain name speculator" from a "domain name cybersquatter." Seven months ago, I discovered a treasure trove of unregistered domains that contained famous trademarks such as ABCnewscast.com, NBCsportscast.com, WWFcast.com and DJIAforecast.com. Being a dyed-in-the-wool opportunist, I registered 132 of them, envisioning the day when I would get calls from organizations eager to pay me gobs of money for the names.

Since then, I've deliberated a lot about the ethics of using someone else's brand name, and I decided to "repatriate" those 132 names, offering them free of charge to their corporate owners. I see it as an opportunity to be part of a solution rather than part of a problem. I'm no saint, but for me this opportunity is more important than the chance to make a quick buck. (The list can be seen at www.namezebra.com.)

The domain name industry has garnered a sleazy image for several reasons:

■ There's no consistency to the valuation of domain names. Highly publicized sales have seduced many speculators into thinking that their names must surely be worth six figures, even though they contain misspellings or are hopelessly tacky. (Recently, auction sites listed "real-yesstate.com" for a mere \$750,000 and "baby2k.com" for a more down-to-earth \$325,000.)

Lessig story sparks comments on privacy

THE LAWRENCE Lessig interview, "Who's Controlling Cyberspace?" [Business, Feb. 7], reaffirmed my conviction that much of academia is inhabited by flaming Marxists bent on destroying the traditional systems of the U.S.

Lessig claims that Y2k could have been ameliorated, if not avoided, had there been government regulations to force companies to write code that was Y2k-compliant. But he wasn't around when programs first started to come into being and has no idea about economy-of-storage policies in place at the time. If he meant this should have been done after the initial period of computer development, does he mean there should have been regulations on software vendors or on any code written anywhere? If he is referring to the latter, then he knows ab-

solutely nothing about programming and production schedules. And, by bringing Big Brother into every MIS organization, you destroy initiative and creativity in programmers and analysts.

He also said the FBI should have back doors into the information traveling across the Internet. I don't want these jack-booted thugs to monitor every piece of information moving electronically. I'll take my chances with commercial software firms and the alleged invasion of my privacy by them.

Ron Baker
Senior systems programmer
Catherine's Touch
Oregon City, Ore.
RonRBaker@aol.com

THE FIRST question on privacy concerns was especially interesting, appearing as it did online on a page with Doubleclick ads. Doubleclick's antiprivacy position is such that I've configured the hosts file on my sys-

The market will ultimately dictate a name's value, but speculators should realize that these big-dollar sales are very rare.

■ Because of the Internet's "Wild West" mentality, users ignore laws and common courtesy, believing that anonymity equals impunity. Anyone who's ever been in a chat room knows that it's standard procedure to embellish upon who we really are. (After all, how could everyone be a 25-year-old supermodel or a Mercedes-driving tennis pro/millionaire/rock star?) The Net is a non-stop masquerade ball.

■ If Internet users are willing to stretch and break laws, government intervention will follow as surely as night follows day. Regulation is antithetical to the Internet. If we want it to be free, we have to mind our manners.

The question I want to address is this: Is domain name speculation a bad thing? My emphatic response is "No!" The Gold Rush and the Oklahoma Land Rush were catalysts for the development of frontiers. Hardy pioneers survived while others failed.

In the final analysis, the survivors were decent, industrious folk who turned the wilderness into cities and villages. Today's land rush is taking place on the Internet and, as in the Wild West, the survivors will be the strong and the principled. ▀

READERS' LETTERS

tem to block all access to and from its servers.

Charles Oriez
Legislative chairman
Association of Information
Technology Professionals
Littleton, Colo.

Y2k: Enough already

WILLIAM Ulrich's comments ["We Still Haven't Reached the Final Chapter of Y2k," News Opinion, Jan. 24] made me angry. Y2k was a nonevent. Some of the money spent provided real value, but most was a complete waste. Now here comes the most self-serving column I have read about the event, warning us it may not be over. Can we please get on with our lives?

Jim Tahler
Chattanooga, Tenn.
jim@tahler.com

Crusoe chip concerns

MARYFRAN Johnson's likening of Transmeta's Crusoe chip to *The Blair*

Witch Project ["Blair Witch Chip," News Opinion, Jan. 24] conjures up some scary images. But there's more to this than a lost film class.

A new processor is not suddenly going to make Microsoft applications palatable on a handheld device. The PalmPilot is wildly successful because it addresses the issue of scale. It is simplicity.

Will I still have to boot Windows on a micro PC? Running Linux on my micro PC will force me to "fdisk" the emulated disk space, so why bother?

Rich Snow
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COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

JOHN GANTZ

Capacity planning an obsolete notion

THERE USED TO be rules and algorithms for sizing systems, storage and memory. Capacity-planning programs would take input on the number of users, expected file transfers, load statistics and growth estimates, then spit out the disk and CPU sizes you'd need.

Forget it. All that stuff is obsolete. In the E Age, none of this applies.

Take Charles Schwab, for example. In early 1998, the brokerage's Web site was handling 6 million hits per day. Then it lowered prices and made a concerted effort to land online accounts, and by last April, its daily Web traffic soared to 75 million hits. The company had to add five mainframes and increase IT staff by 50% — to 2,000

full-time equivalents — to handle the load. A little later, Charles Schwab added more mainframes. Capacity planning consisted of buying computers and switches as fast as the firm could. It also involved working with IBM to find a way to link a bunch of mainframes into the equivalent of a 32-way multiprocessor.

Schwab also found out what you can expect when you commit to e-business

in a big way — traffic is much "spikier." Schwab used to design its systems to handle three times its daily peak traffic average. But in its online operations, it had to build capacity to handle three times its *hourly* peak average, or the same as 10 times its daily average.

Some of the reason for such spikiness is self-fulfilling. Make an e-business site easy to use and navigate, make it personalized, and guess what? You'll get a lot more traffic! One online broker told me that more than 90% of all online traffic at places like ETrade has nothing to do with commissioned stock trading — just a lot of investors checking their portfolios many times a day.

For most companies, this will be a triple whammy. You'll be drawing in more site visitors, increasing traffic per visitor and growing off-business-hour or off-time-zone traffic. But you won't have a clue how that demand will grow during a month, a quarter or a year.

In a survey of 400 U.S. businesses in the middle of last year, International Data Corp. found that the average company expected to nearly double the number of individuals served at peak-use times — from 6,300 to 12,000 — by the end of last year. The companies also expected the number of transactions per day to grow from 2,000 to 23,000 and the size of their databases in support

of their Web sites to grow from 175GB to 1,100GB.

Got that? More than 10 times the number of customers in six months and more than six times the capacity to support them.

That may be right. But if Schwab is a leading indicator, those metrics are too conservative.

Three tips:

- Your capacity planning should be based on your capacity to order systems, storage or memory and to get them installed. You'll be ordering on demand.

- Choose an architecture that can scale to at least 20 times what you really think you'll need in six months. When was the last time anyone chewed you out for having too much disk-drive capacity?

- Don't forget the changing peak-to-average load dynamics. And while you're at it, you might as well plan a 24/7/365/24 (time zones) operation.

In fact, don't plan at all; just do. ▀

WILLIAM M. ULRICH

How governance leads to e-success

GROWTH IN E-COMMERCE revenue is fueling demand for new organizational models. An e-business requires holistic governance structures to rapidly exploit dynamic market opportunities. This requires looking beyond traditional joint ventures or spin-offs to create entities that can embody the flexibility, diversity, openness and dynamics of e-driven paradigms.

Most corporations reflect the industrial-era, command-and-control hierarchies that were prevalent when information took weeks or months to disseminate. Today, information is immediately available to suppliers, customers and employees — none of whom can wait for decisions to descend from a hierarchy. To ensure that e-businesses are as flexible and dynamic as the markets they service, their infrastructure must facilitate decisions and actions at the outermost level possible. The "chaordic" organizational model can address these requirements.

The term *chaordic* was coined by Dee Hock, founder and CEO emeritus of Visa International and author of *Birth of the Chaordic Age* (Berrett-Koehler, 1999). According to Hock, a chaordic organization is any self-organizing, self-regulating, adaptive, nonlinear, complex organization whose behavior harmoniously exhibits characteristics of both chaos and order. It exhibits diverse patterns and probabilities not governed or explained by the behavior of its parts — in harmony

with the fundamental organizing principles of nature and evolution.

Chaordic behavior is innate to e-businesses because they rely on the Internet, which exhibits diverse patterns and probabilities not governed or explained by the behavior of its parts, and other entities that must compete and cooperate in order to succeed. Internally, marketing, sales, distribution, warehouse, procurement and other business units must integrate workflow, data and systems into e-business strategies. Externally, the success of an e-business depends on cooperation from vendors, suppliers, distributors, design teams and customers, who lie beyond the control of internal chains of command.

Hock created Visa, which handles \$1.25 trillion in transactions annually for 22,000 member institutions, to save the failing credit-card industry in the late 1960s. One can find similarities between the challenges facing the credit-card industry and today's e-business environments. Visa's founding members needed a way to concurrently compete and cooperate — or drive each other out of business. They found that they could reach more people and penetrate more markets working together, so they created an organization where everyone participated and no one dominated: Visa.

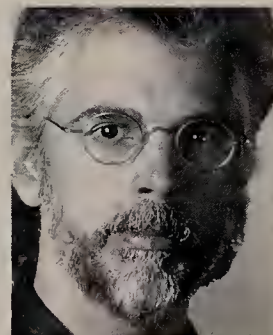
As outsourcing, supply-chain diversity, Internet dependency and competition drive companies toward nontraditional strategies, new collaborative strategies must emerge. Creating a chaordic organization to meet these challenges requires drafting a purpose and guiding principles, identifying participants, designing an organizational structure and embedding these elements into a constitution. It's the foundation for a legal entity allowing participants to carry out practices in support of the purpose, principles and structure.

Consider the creation of an e-business within the automotive industry, whose purpose is to coordinate end-to-end supply-chain management. Member companies, including suppliers, automakers, distributors and retailers, would establish a chaordic governance structure that ensured the equitable availability of supply-chain information among all participants. The chaordic e-business strategy employed by this entity would maintain a supply-chain knowledge base to expedite the tracking and flow of parts and products, facilitate the shift to e-commerce and accommodate the morphing of existing distribution chains.


A chaordic organization can support many e-business strategies. A conglomerate might launch a chaordic e-business for its subsidiaries. Or an industry might establish a member-owned company immune to a takeover, like Visa. The Internet, which is being challenged by crackers, governments and monopolies, could establish a chaordic governance structure. Addressing these issues will be difficult, but mobilizing relevant and affected parties under a common alliance is a big first step. Ultimately, an e-business requires diverse factions to work toward common objectives in an information-driven world. Hierarchical infrastructures are ineffective in dealing with this challenge, and chaordic governance structures may be a good approach for many industries. ▀



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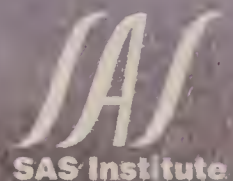
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TAILORED PDAS

New tools are making it easier for non-IT people to build their own applications for personal digital assistants (PDA), putting power in the handhelds of the users. Life is easier for Navy helicopter pilots in San Diego, for example, after a non-programmer chopper technician wrote a Palm application to help capture flight information. **▶ 32**

CYBERBASHING

The threat of cyber-squatting is diminishing, with new federal restrictions on using trademarks in domain names. But bash sites with names similar to those of big companies are still going strong and are likely to stay that way. **▶ 32**

REALITY CHECK

Liz Claiborne CEO Paul Charron takes a contrarian view of e-commerce. He's working with resellers on Web sites for consumers and pressing money-saving extranet efforts with suppliers and retail outlets. He's also experimenting with other ways to go online to expand sales, not just move them from one channel to another. **▶ 33**

DEATH-MARCH PROJECTS

Ed Yourdon says that competition is driving companies to launch death-march projects — IT jobs that *have* to be finished in a short period of time to improve business. Some IT folks avoid them, but there

are ways to manage death marches to keep staffers not only motivated, but also ready for the next one. **▶ 36**

ERP CAREERS

ERP projects continue to offer career opportunities, but the picture is getting more complicated. Top jobs go to those who can handle merger integrations, e-commerce connections and the fierce pressure and travel requirements of projects that are under intense scrutiny from bean counters. **▶ 40**

ERP PROJECTS

Treating ERP as a tech project is a good way to cause a long, expensive implementation to fail, says Tom Davenport, a professor and author of a book on how to succeed with ERP. Instead, treat it as an ongoing business project and use available data to *change* business processes, not just automate them. **▶ 42**

JARGON JUDGE

Virtual means *almost*, not *electronic*, Anne McCrory rules in Jargon Judge. *Virtual* is almost nonsense, and completely inaccurate the way that it's used in e-commerce. **▶ 51**

NEGOTIATING

Negotiating is a team sport, or it should be, Joe Auer writes. The up-front team needs specialists in technology, procurement, finance and management, but you also need a team to keep negotiations in line with strategy. **▶ 53**

THREE "NEW KIDS" on the IT block at StateStreet Bank in Boston. From left: Lorraine O'Connor, Jude Shabry and Ingrid Eikinas



HOW TO KEEP THE 'NEW KIDS'

NOT ALL THOSE TWENTYSOMETHING IT professionals are toiling for dot-coms. In the second of a two-part series, 15 young corporate IT professionals tell *Computerworld's* Kathleen Melymuka that it takes more than stock options and Foosball tables to attract them and keep them on board. They want responsibility but also freedom, a supportive culture but not a smothering bureaucracy — a job that's challenging but lets them have a life.

38

Simple Tools Let Non-IT People Build Custom Apps

Do-it-yourself apps ease specific tasks, help users make jobs faster, more flexible

BY MATT HAMBLÉN

HANDHELD devices are great for workers who gather information in the field, but creating an interface tailored to the requirements of a specific job still requires an application developer's time, right?

Nope.

A U.S. Navy technician and an election campaign consultant recently found that at least one tool designed to build applications for 3Com Corp. PalmPilots is simple enough for non-information technology people to use.

Nine months ago, Bill F. Ragatz, an aviation warfare systems operator, developed an application to help Navy Seahawk helicopter pilots in San Diego gather flight data.

And Rochelle Day, president of Seize the Day Solutions in Las Vegas, wrote an application that campaign volunteers in Nevada use to poll voters in their homes.

Both used Pendragon Forms by Pendragon Software Corp. in Libertyville, Ill. The tool, which sells for \$149 per developer and up to \$45 for each user, is in use at 5,000 companies, Pendragon officials said.

"I picked Pendragon because it was easier to work with for accessing databases than other products," said Ragatz. "I started using it with absolutely zero development experience."

Ragatz said it took 20 minutes of training on Pendragon Forms and only a few additional minutes to build the first application.

Both Day and Ragatz said they tried to use CodeWarrior by Metrowerks Corp. in Austin, Texas, but found it too complex and time-consuming.

Ragatz said he got the idea last year to replace paper forms that required pilots to spend about an hour after

every flight typing flight information into PCs. Today, he estimates he has cut input time at least in half.

"That's a huge time savings for a pilot coming in at midnight after flying for seven hours who wants to get home and might need to fly the next day," he said.

Pilots and technicians use about 14 PalmPilots while flying or working on a fleet of 10 \$16 million Seahawk helicopters that are flying almost constantly on a variety of missions, including search and rescue.

Day has a development background, but she said she likes Pendragon Forms because it takes her only a couple of minutes to change a form on a handheld when she updates



BILL F. RAGATZ trained for 20 minutes on Pendragon Forms before he built the first application to help Navy Seahawk helicopter pilots gather flight data. He also tried using CodeWarrior by Metrowerks

questions used in polls.

Day's volunteers carry PalmPilots that are loaded with the names, addresses and party af-

filiations of voters. They ask residents questions about their candidate preferences based on that information, and Day

sells the raw data and her services to candidates to help them plan their campaigns. The surveys can be updated easily to garner opinions on hot topics, she said.

Campaigns have long used what are known as "walking lists" to poll voters in key precincts, but voter data sheets are often photocopies of handwritten information that are hard to read, Day said.

She buys the voter data on floppy disks from election officials and tailors questions to provide information for a campaign manager. Sometimes those questions change daily or weekly during a campaign.

The PalmPilot IIIx that Day uses costs \$226. Ragatz acquired Palm V's for less than \$350 each through a Navy procurement program.

Analysts called both applications good examples of how people can use inexpensive, relatively simple tools to make their jobs easier. "If all you need is a front-end client to retrieve and post data that's not tied to legacy code, it makes a lot of sense to use these products," said Jim Cumisky, an analyst at Mobile Insights Inc. in Laguna Niguel, Calif. ▀

Cyberbashers Proliferate

Even as threat of cybersquatting eases

BY LEE COPELAND

Visit the Web address www.GeorgeBushsucks.com, and it will forward you to the presidential candidate's official Web site. George W. Bush is apparently savvy enough to sidestep that online embarrassment, but many corporations are still exposed to cyberbashing, if not cybersquatting.

Corporations like The Chase Manhattan Corp. in New York acknowledge purchasing domain names such as www.chasesucks.com and www.chasestinks.com. Even so, Chase neglected to purchase www.chasebanksucks.com, a Web site run by disgruntled former customer Scott Harrison, who dedicates it to publicizing bad experiences with the firm.

Legal experts say the days of cybersquatters cashing in on

their hoards of Internet domain names of big companies are long gone. Last October, Congress passed the Anti-cybersquatting Consumer Protection Act, making it illegal to register someone else's trademarked domain in bad faith or with the intent of selling it.

But cyberbashing is here to stay. Legal analysts say that as long as these Web sites contain legitimate complaints that aren't libelous, defaming in character, sponsored by com-

AT A GLANCE

Cybersquatting

What is bad-faith intent with domain name registration?

- "Offering to transfer, sell or assign name for financial gain without using or having intent to use domain name in a bona fide offering of goods or services"
- "Diverting from one domain name to the URL of an unrelated business"
- "Owning several similar registered domain names that aren't associated with the mark owner"

petitors or infringing upon trademark rights by confusing consumers, they probably fall within the protections of the First Amendment.

Walter Effross, professor of business law at American University in Washington, said Web sites devoted to bashing corporations are on the rise. He said information technology managers should buy up obscene and critical variations of their companies' domain names because "if they don't, someone else will."

Technology law attorney Paula Krasny at Baker & McKenzie in Chicago said litigation isn't always the best option for combating corporate bashing on the Web. "You have to be careful when filing lawsuits, because sometimes it can backfire, and commentary spreads like wildfire throughout the Internet," she said. "And unless it's a slam dunk, litigation is always a battle, and it's expensive." With regard to cyberbashing lawsuits, Krasny advised, "Sometimes it's best to step back and fight the battle through technology rather

than going through the courts if a claim is questionable, because there is a balance between First Amendment and trademark dilution rights."

One such alternative involves products from companies like 1 Web Strategy Inc. in Chicago and Green Flash Systems LLC in San Diego. Both companies offer software and online marketing services focused on gaining top-page positioning on Web search engines. The right combination of words and metatags can cause bash sites to turn up in response to Internet searches nearly as often as the official site, said Chris Utz, vice president of sales at 1 Web Strategy. For example, www.chasebank sucks.com turns up fourth in a search for "Chase bank" using Santa Clara, Calif.-based Yahoo Inc.'s search engine.

1 Web's software and service help official sites come up in searches by getting them high keyword rankings on search engines and creating secondary domain name pages. Then, the bash site is less likely to place highly on a results page. ▀

CEO: Blind Rush to E-Commerce Is Foolish

Big consumer site efforts can waste money and rile resellers, without growing sales

Paul Charron, CEO of Liz Claiborne Inc., has an Internet strategy, but he won't let it jeopardize his core business. He spoke about the company's e-commerce philosophy with Computerworld senior editor Carol Sliwa at a recent National Retail Federation conference.

Q: How do you feel about selling Liz Claiborne-branded clothing over the Internet?

A: Channel conflict is a real problem. At present, we don't have any plans to sell over the Internet, but we have a very well-developed Web site that gives us a lot of consumer interaction. My challenge in the case of Liz Claiborne — which is in every department store in the country and in every lifestyle — is not to find more venues for the consumer to purchase Liz Claiborne. My challenge is to get the venues that I have more productive.

There are other brands in our portfolio that are not nearly as ubiquitous as Liz Claiborne. For example, Lucky Brand dungarees, a company we bought last June, is our pioneering brand [for selling via the] Internet. It gives us an opportunity to learn.

I think honestly that some of

the most important decisions you can make about the Internet today are the things that you will not do, as opposed to simply the things that you'll do. There's tremendous pressure on people like myself to get to the Internet. I mean, every time you turn around, somebody's [saying] the Internet's going to take over the world. In all honesty, I don't think so.

It's going to be a big thing, and we're capitalizing on the Internet, but there are a lot more ways to use the Internet than simply enabling the consumer with a click of her mouse to purchase the outfit that you're wearing. ... You can't tell how something's going to fit over the Internet.

Q: Are you ruling out the possibility of selling Claiborne products on the Internet?

A: No. You need to be flexible. We're not going to be hoist with the petard of our own principles. ... Right now we're selling our Liz Claiborne brand on the Internet via Macys.com and Bloomingdales.com. We may sell other brands. Two, we're selling on the Internet via Lucky. Three, we have a number of other Internet approaches that we're simply not

prepared to announce at the present time.

The data today [suggests] that for the next five years, the Internet sales in the U.S. are going to be transfer sales [from physical stores to online, with no increase in total sales]. So why do I need that?

We will have an Internet strategy that will be very commercial, beyond the strategies that we're now employing.

But clearly, what we're not going to do is build a massive site, put that on the [profit-and-loss statement]. And we're talking \$9 million, \$10 million, which for me is 9, 10 cents a share if I do it on the P&L. Now why in the hell would I do that, unless I was going to get an incredible return?

I can lose 9 to 10 cents a share, as I will in 2000, to successfully birth the Kenneth Cole brand, which is a new brand in women's wear that we've licensed that will extend my reach. And that Kenneth Cole brand will be \$300 million in three years. Now, I don't think the Liz Claiborne brand, if I was to spend \$9 million to \$10 million [on an e-commerce

site], is going to represent \$300 million in incremental sales in three years. So it's really common sense.

Shareholders pay me to make money. They don't pay me to come with ideas that are going to have a return in 2020. I can invest money today that's going to generate a return in 2005. But I better cover it, because I've got to show consistent double-digit earnings

growth quarter after quarter, year after year. If I don't, the stock market will penalize me.



LIZ CLAIBORNE'S Paul Charron: "Shareholders ... don't pay me to come with ideas that are going to have a return in 2020"

Q: Has the thought of spinning off a dot-com operation ever entered your head?

A: No. If it doesn't make sense for me to do with my core brand right now, I've got nothing to spin off.

Q: Do you think companies are in too much of a rush to get to the Internet?

A: I think everybody should have a response to the Internet. But an Internet strategy is not necessarily a rush to sell product on every one of your brands over the Internet next Tuesday. I think personally

we're using the Internet a lot more effectively in extranets or intranets than we are in terms of selling stuff over the Web.

Q: How are you using Web technology to interact with your retailers?

A: We are working very closely with our key retail partners on something called Liz Link, which is an Internet-based order status system.

In addition, we're working with Saks Inc. on something called Liz@Market, which is a virtual showroom.

Q: How important is technology in your dealings with suppliers?

A: The ability to use technology is a very, very important capability in choosing suppliers. We've cut the number of suppliers we have in the last five years by 50%, despite the fact that we've doubled the number of units we source with the growth of the company.

It was a conscious decision on our part to stop going from country to country in search of an ever-decreasing labor cost. And instead, we work with people to drive more productivity and better communications and better relationships, better anticipation, common management and technology as the great enabler in that regard. ▀

Consultants Aim to Teach IT To Help Itself Stay on Track

Methodology teaches how to align IT, business

BY JULIA KING

Imagine an information technology consulting firm that gives away its research and analysis for free online.

If users like what they see, they can hire the firm to do on-site, fee-based consulting work through an arrangement that calls for the consultant to leave the client a set of step-by-step directions explaining how the

work was done. That way, IT groups can do the work themselves next time.

That's the play Technology Evaluation Center (TEC) is making to IT managers. Founded by a group of former Gartner Group Inc. analysts and executives, the new firm offers IT managers detailed research on seven IT topic areas at its Web site (www.technologyevaluation.com).

And rather than pay as much as \$20,000 a year per topic area to subscribe to the research services, IT managers can get it all for free.

Plenty of other Web sites offer free information about IT products and vendors. But many users still pay heavily for analysts' insights. Last year, for example, Giga Information Group Inc.'s clients spent an average of \$52,000 for Web-based access to the company's research and analysts, a company spokesman said.

Where TEC is hoping to make a buck is on its two so-called premium content services, whose prices can range from \$100,000 to \$500,000.

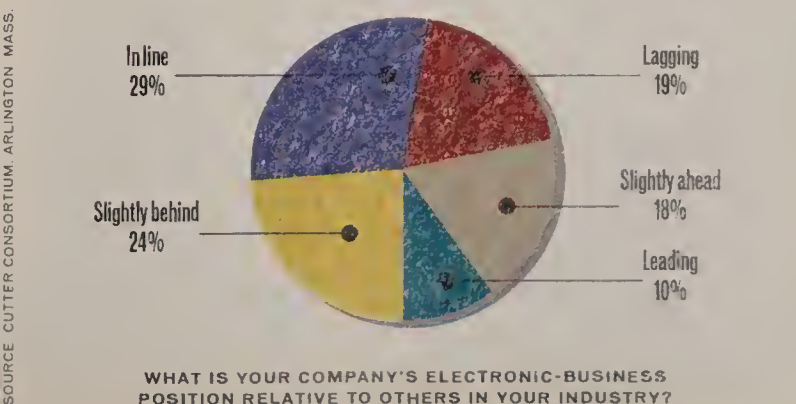
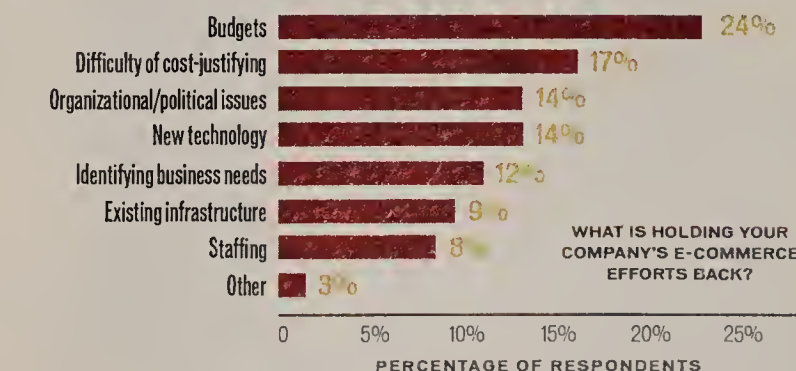
The first service, known as continual business alignment, teaches IT managers how to prioritize — and quickly reprioritize — technology projects on an ongoing basis to stay in sync with ever-changing strategic business plans.

TEC, page 34

SNAPSHOT

E-Commerce Conundrum

Users told Cutter Consortium money worries hinder e-commerce efforts. But only 43% said they're trailing their competition online.



SOURCE: CUTTER CONSORTIUM, ARLINGTON, MASS.

Continued from page 33

TEC

CBS Corp. CIO Joe Seibert started that very process with

a traditional consulting company that spent eight months studying the situation. "But business is changing so rapidly, I can't spend eight months studying what to do and spend \$1 million creating a plan,"

Seibert said. "I need to shortcut the study process and get right to the work."

So late last August, Seibert brought in TEC, whose two consultants spent one day per week working with 12 CBS IT

managers. The consultants trained the managers how to identify their company's key business stakeholders plus how to interview those stakeholders for specific information they would need to lay out

a realistic, one-year IT projects agenda that was also aligned with CBS's business goals.

A month later, TEC and IT had zoomed in on electronic-procurement and data-conversion projects that IT would need to focus on quickly to advance CBS's plan to deliver more programming to PCs and handheld devices.

Moreover, Seibert said, TEC left its methodology behind, which enables the IT managers to continually poll CBS's business planners to keep their agenda on course.

"My goal is to enable my management to keep performing this process. I don't want to hire a consultant every six months to a year to do this," Seibert said. "I want my managers to have the ability to think and act."



JOE SEIBERT of CBS: "I need to shortcut the study process and get right to the work"

The Downside

But Giga analyst Julie Giera said that's precisely the downside of TEC's consulting model.

"Most companies that look to outside consultants are looking for third-party validation," Giera said. "You won't get that by having your own staff do the interviews. You lose objectivity."

TEC's other fee-based service helps users select and negotiate for new technologies, with software that automates much of the requirements-matching and vendor-selection processes.

Kathleen Vandervoort, vice president and controller at Harlequin Books in Toronto, said TEC helped shorten the process of selecting a new general ledger system from six months to a few weeks.

"They also helped us through the negotiation process," including fielding follow-up calls from vendors — all for less than \$100,000, "which was a real deal," said Vandervoort.

"Our total investment in the software and implementation will be \$1.5 million, and to make that kind of decision, less than \$100,000 is pretty small," she said.

Also, because TEC doesn't do implementations, the firm brought a "high degree of objectivity," Vandervoort said. ▀



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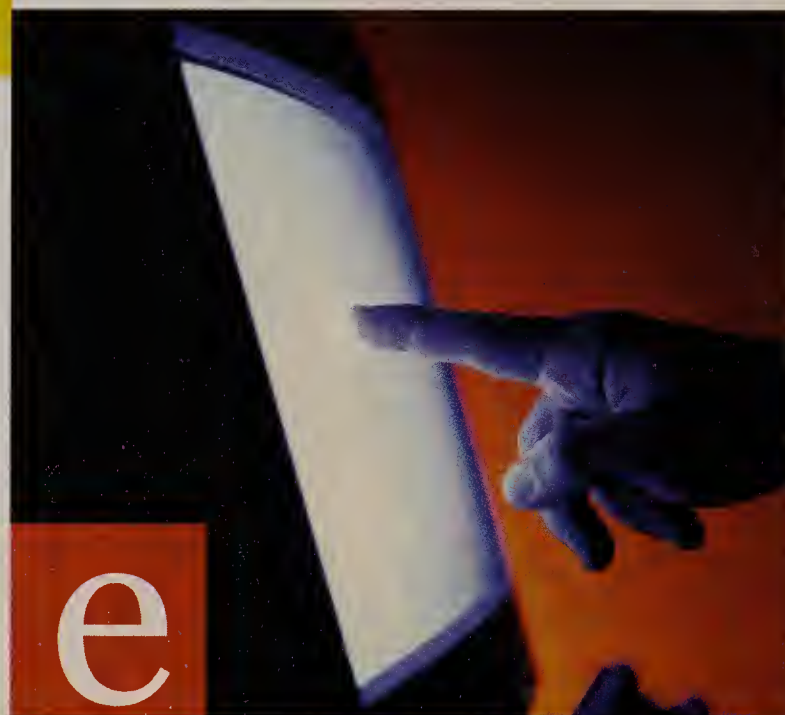
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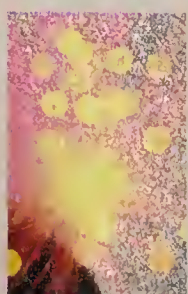


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WORKSTYLES

Signing Bonuses Filter Out To Rank and File

What does it take to snag talent-ed IT people these days? According to RHI Consulting in Menlo Park, Calif., most employers now offer signing bonuses that range from 10% to 20% of an employee's salary, or about \$6,000 for a recent college graduate.

And increasingly, signing bonuses aren't just a perk for executive candidates. An RHI survey of 1,400 CIOs shows that more than 40% offered signing bonuses to staff employees as well.

"Signing bonuses were once strictly the domain of executive compensation but are now being driven down into the rank and file," said David Foote, managing partner at Foote Partners LLC, a New Canaan, Conn.-based consultancy that specializes in information technology workforce issues.

Leslie Stevens, regional sales manager at RHI, said 70% to 80% of requests for candidate searches involved compensation packages that offered either cash, stock options or both. "We have more requests than people. We have to channel the candidate pool to the best opportunity out there," Stevens said.

Foote said a cash signing bonus is one way companies can lure top talent in a competitive hiring market without upsetting the salary structure, which can cause friction among employees.

According to Foote, a signing bonus can include everything from cash to stock options to a company car.

In fact, Framatone Technolo-

gies has offered to reimburse the fourth-year tuition of any University of Virginia student it recruits, according to CJ Livesay, director of engineering and career services at the Charlottesville-based school.

For out-of-state students, for whom tuition is higher than in-state students, that's a signing bonus worth \$16,000 - or about \$10,000 more than the average bonus computer science majors received last year, according to the National Association of Colleges and Employers in Bethlehem, Pa. Based in the small town of Lynchburg, Va., Framatone hopes to lure students who typically seek jobs in metropolitan areas, said Livesay.

Cash Incentives

While college seniors cite a variety of nonmonetary factors that influence their job decisions [Page One, Feb. 7], a large sum of cash is attractive to recent graduates who may need money to repay loans or put a down payment on their first apartment, said Julie Cunningham, manager of global college relations at Tellabs Operations Inc.

Cunningham said the Lisle, Ill.-based company encourages managers to shell out cash signing bonuses for recent graduates that are as high as 10% of the candidates salary.

Companies that are recruiting out-of-state students have a better chance if they offer a cash award to offset travel expenses, said John Moerer, a computer engineering major and college senior at Northwestern University in Evanston, Ill.

But some students simply like having disposable income. "You're poor throughout college. It's pretty exciting to have a nice chunk of change," said Moerer.

Allison Arnold, assistant director for engineering and sciences at Northwestern, said the average signing bonus for engineering and computer science students increased from \$4,500 in 1999 to \$5,000 this year. One reason for the increased popularity: There is more leeway for negotiation than with salaries.

"We coach students to negotiate salary first, and the next step is to negotiate the signing bonus or stock options," said Arnold. - Julekha Dash

Who Gets What?

CIOs were asked, "At which of the following levels does your company offer signing bonuses when recruiting IT professionals?" Of those offering a signing bonus:

Executive only	40%
Staff and management	36%
Management only	19%
Staff only	5%

SOURCE: RHI CONSULTING SURVEY SAMPLE 1,400 CIOs

ED YOURDON

People and projects

WHETHER IT'S A NEW e-business project, a start-up venture or just a "plain-vanilla" systems-development undertaking, every project today seems to be a death march: The system must be built in half the time that was scheduled or with half the staff or budget. Such projects were an anomaly through the mid-'90s, but then,

the pressure of Y2k projects and the explosion of e-business turned everything into a death march.

There are many arguments about the best tools and the best combination of rapid prototyping and rigorous development processes for death-march projects. But there's another component - which authors Tom DeMarco and Tim Lister called peopleware in their 1999 book of the same name - that also requires special attention.

If peopleware isn't managed properly, such a project can create pressures that the development staff simply can't handle; in the worst case, they burn out and quit. But in a well-managed death-march project, the development staff not only thrive, but they also typically volunteer for another death march.

Perhaps the most important requirements are candor and honesty about what will be required. Five or 10 years ago, project managers would apologize for the intense pressure associated with such projects. But in today's environment, competitive pressures make some degree of death-march behavior unavoidable. That doesn't mean every IT professional will like it.

There are many reasons why someone might opt out of such a project, the most obvious being family commitments. If someone is unable or unwilling to put up with the rigors of a death-march project, it's better to find out at the beginning. Indeed, a candid explanation of the project's true nature may discourage all but the young, energetic, unmarried, antisocial, workaholic technonerd from even considering the assignment.

But even the most energetic workaholic has endurance limits, so it's also important for the project manager to ensure that the project lasts no more than six months. There are exceptions: the Apollo program, certain Microsoft development projects and numerous others have stretched at least two or three years. But organizations like NASA and Microsoft can attract superstars with endurance levels far beyond those of most employees at the average organization.

Mere mortals typically start burning out after

six months of nonstop, 80-hour workweeks. If the project is scheduled to continue at that pace for 12, 18 or 24 months, the risk of failure increases dramatically. Even in a tolerable six-month project, one of the project manager's important day-to-day tasks is to watch for the team member who shows signs of fatigue before he does more harm than good, such as inserting two new bugs for every one he fixes. It's best to send him home for a long weekend of rest and recuperation.

Every organization develops its own strategies for optimizing the peopleware component of a project, but it must first realize that success depends heavily on the individual staff members making an extraordinary effort.

Thus, some organizations include "morale money" as part of the budget, so the team can be supplied with pizza and beer on Friday nights or a bottle of champagne can be sent to mollify a spouse who hasn't seen his or her partner in several weeks.

One of the most difficult tasks is finding appropriate rewards for team members who help achieve success in a project. Stock options and six-figure bonuses are an obvious solution, but they're simply not available in many companies. A monthlong sabbatical might be an alternative; company-paid training - even subsidizing the cost of pursuing an MBA - might be another.

Creative solutions can almost always be found, but again, they depend on the organization understanding that without committed team members who believe they'll be treated fairly, the required level of performance won't happen.

Many of these strategies conflict with traditional personnel policies, especially in old-fashioned companies and the public sector. But those

policies and strategies must change quickly and dramatically if today's high-pressure death-march projects are to succeed. ■

Even
the most
energetic
workaholic
has
endurance
limits.



Yourdon is editor of Cutter IT Journal, published by Cutter Consortium in Arlington, Mass. His book, *Death March*, was published in 1997 by Prentice Hall. Contact him at www.yourdon.com.



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Keeping the New Kids

They're smart, savvy, ambitious, eager and determined to have a life. In the second of a two-part series, this younger generation tells IT managers: Here's what you need to do to hang onto us. By Kathleen Melymuka



THEY'VE RESISTED THE dot-com hype and begun their careers in traditional industries. They think such companies can provide a more balanced lifestyle,

more integration with business, a broader range of challenges, more stability and a more humanistic culture.

Looking at their careers from vantage points that range from six months to four years, 15 "new kids" in IT talk about what they love and hate about work, what kind of environment brings out the best in them and what their companies must do to keep them.

The new kids say their top sources of job satisfaction are the people, culture, atmosphere and balance that make work enjoyable. "I like the culture of family," says Kevin Kaiser, 24, a business analyst at Kraft Foods Inc. "My friends at work are also my clients. It makes me do a better job because I know they're counting on me."

"It's a nurturing environment with a great support structure," says Amy Younggren, 23, an information technology management associate at Prudential Insurance Company of America Inc. "If I ever have any problems, people are willing to [help] me along."

The young folks love a challenge.

**The focus of
young IT folks
usually is not
money.**

CHRIS MEYERPETER,
MONSANTO

"We are dealing with a lot of new technology, so I'm constantly learning," says Sohil Shah, 22, a Java programmer at AutoZone Inc. in Memphis.

Lorraine O'Connor, 24, a senior systems analyst at State Street Bank & Trust Co. in Boston, likes the breadth of her duties. "It's very diverse — not just programming or just analysis," she says. "I'm exposed to the whole range of the development life cycle. It's the variety I like."

They prefer working on the leading edge, but they're willing to mix it up. "I work on a legacy system with Cobol and a mainframe," says Marc Dugger,

26, a programmer/analyst at Southwest Airlines Co. "I'm also on a project that will provide a Web-to-host solution for customers. So in one day, I can work with a wide variety of technology."

They like options, says Jude Shabry, a 26-year-old systems officer at State Street. "Some things interest me more than others, and I find I can work on projects that interest me, instead of being stuck in the specific role I was hired into," she says.

They appreciate freedom and crave responsibility. "If I have a priority in my personal life, I can work later some days, leave earlier others," says Mike Vannoni, 25, a senior business analyst at Kraft.

"My boss gives me the business problem, and I have to figure out how to solve it using Web technology," says Ingrid Eikinas, 27, an assistant vice president at State Street. "It gives me a chance to be creative."

Responsibility gives them a stake in their work — and the company. "I've been able to see this project from beginning to end and how the organization has embraced it," says Madeline Morales, 23, a senior business analyst at Kraft. "There's a sense of pride and ownership."



THREE "NEW KIDS" ON THE IT BLOCK
(from left): Lorraine O'Connor, Jude
Shabry and Ingrid Eikinas at State
Street Bank in Boston

The twentysomethings have a keen interest in business, and many say working in a particular business is an important factor in their career satisfaction. "My job allows me to combine my knowledge of finance and IT," says Omar Lari, 25, an analyst at State Street who's pursuing an advanced degree in finance. "By practicing both finance and information technology, I get the best of both worlds."

When they talk about what they love, they don't mention money, except as a mistaken priority. "I have a lot of friends who chased money and didn't find a lot of happiness," Dugger says.

The Downside

Young IT folks come down hard on cafeteria food and commutes, but what really burns them is when bureaucracy or politics impedes progress. "We spend a lot of time talking about making decisions instead of making the decisions," says O'Connor. "I understand the value of analysis, but I can't stand when we spend all this time talking and talking and never really start working on it."

Policies and procedures often seem counterproductive to these twentysomethings. "I didn't have access to

machines I needed, so I had to submit the paperwork and get it signed off by four different people," says Shabry. "I couldn't just make things happen like you can at a smaller place."

They find it particularly irksome to have to wait for authorization when they could fix a problem themselves. "It can get frustrating when you're waiting on some alteration to an application that you don't have authority to

Thumbs-up and -down

What our group of twentysomethings in IT likes and dislikes about work:

LIKES:

- Team culture
- Strong support structure
- Challenge
- Training
- Variety
- Choice
- Responsibility
- Trust
- Ownership
- Realistic expectations
- Respect

- Business strategy
- Work/life balance

DISLIKES:

- Bureaucracy
- Excessive analysis
- Inaction
- Politics
- Repetition
- Red tape
- Narrow focus
- Low priority
- Micromanagement
- Crisis culture

do," says Jackie Geraci-Barbanente, 22, an associate systems analyst at Kraft. [CW apologizes for misspelling her name in last week's article.]

Because their companies are technology users, not vendors, IT isn't the top priority, and that's frustrating, too. "We're not what makes money; we're overhead," says Chris Meyerpeter, IT communications coordinator at Monsanto Co. "If cuts come, new initiatives are put to the side. It's frustrating how that restricts what you can do."

Though they love business strategy, dealing with businesspeople can sometimes be discouraging. "You have to compromise," says Lari. "The business area might have a different idea, [and] you have to live with that. You don't have carte blanche."

And sometimes the sheer size of these companies can be daunting. "It's such a large organization," says Keith Brummel, 23, a programmer/analyst at Caterpillar Inc. "It's hard to know how everything fits together."

"Some days you just feel like it's too big to put your arms around," Younggren says. "You think, 'How can I ever make a difference in a company with 60,000 people?'"

The Best Way to Work

To bring out their best, the new kids say, place them in small, informal teams with continuous challenges, lots of autonomy, easy access to resources and interesting, important work.

"I like to partner with people and have a positive support structure," says Younggren. "I like to have fun when I'm working; if it's very serious, it's not for me."

"I [need] a new problem every day," adds Shah. "Something I've never seen before and [that I can] figure out."

The physical environment can nurture teamwork. "I like the ability to focus but still have easy access to team resources to work together, too," Shabry says. "I like yelling questions across the room. It helps us work as a team."

Having the proper tools cuts stress. "I want an environment where information is readily available, where all the technology is working correctly, where software's not crashing," O'Connor says.

Ultimately, they have to know their work matters. "It's important to know [that] anything I do contributes to the team effort," says Geraci-Barbanente.

Although young IT folks are often viewed as job-hoppers, most of these young people chose large companies with an eye toward staying for the long term. But that doesn't mean they won't leave if their employers don't meet their standards.

"You can have an amazing career and even change careers and stay within this one company," Younggren says. "But to stay, I'll need increased exposure to diversity in people, products,

everything; continuing exposure to upper-level management; and continued support for career development."

"I need a career path that guarantees a future," says Shah. "I'll be looking for an opportunity to move up."

"The biggest thing for me is to have opportunities on the edge of technology," Meyerpeter says. "If I get to [the] point where I'm stagnant with nowhere else to go, that would be the biggest reason to leave."

Eikinas says she's determined to be where the action is in IT, and the action may or may not be at State Street. "If we can be comfortable with the changes that are happening and not be afraid to take some risks, I'll be involved in what's going on, and I'll be happy here," she says.

Beyond these factors, long-term work/life balance is a concern. "I talked with all the women, and I'm confident that I can have a family and stay at Prudential," Younggren says.

How that balance will play out over time is clearly on their minds. "They need to think about the way the concept of work has changed for us," Eikinas says. "My parents would come home and do something else, but for my husband [who also works in IT] and me, work is so entwined with play."

"Sometimes it seems silly that we put on the suits, commute an hour, sit at a PC, then commute home an hour, change our clothes and sit at the PC," she says. "It's all one to us. Most of the work I do is virtual anyway. [Companies] should be thinking about more flexible arrangements."

Advice to Managers

The new kids aren't reticent about expressing their needs. First and foremost, they say, **keep them growing**. "The focus of young IT folks usually is not money," says Meyerpeter. "Training is the key to keeping people."

Next: **Challenge them and have faith in them**. "Don't be afraid to give us things you don't think we can handle," says Kaiser. "We want to grow into that. Let us know your goals and the company's goals, and we can help you get there."

Give them freedom and responsibility. "Let them know what the job is, and let them do it," says Meyerpeter.

Don't promise what you can't deliver. "Be straight," Shabry says. "I know people who have had bait-and-switch tactics pulled on them, and they leave."

Pay attention. "If we come up with an idea, listen to us," says O'Connor. "We have a different perspective. It may take a fresh look to see what's been there all the time."

Finally, **let them loose**. "We don't know any of the old rules, so we do things differently," Younggren says. "We may make mistakes, but give us the freedom to go wild with our ideas. They might be refreshing." ■

COMPUTERWORLD
GUIDE TO
CAREERS
WITH ERP

ALSO IN THIS ISSUE
"The Hunt for ERP Paybacks"
In an interview with *Computerworld*, author and professor Thomas H. Davenport talks about the challenges of ERP project implementations.
See story, page 42



KATHERINE LAMBERT

THE HUNTER GROUP'S David Link warns, "It takes a new class of skills to extend ERP benefits to entire systems"

ERP promise

As companies expand their ERP efforts to new units, systems and global markets, they need IT pros who combine experience, Web skills and industry knowledge to guide them. **By Christine Willard**

OBS IN ENTERPRISE RESOURCE PLANNING (ERP) are demanding more experience and business sophistication than ever, as the market matures and mutates.

"The most dramatic shift in information technology is away from the client/server of 1992 to the client/server, network-centric systems of ERP," says David Link, director of enterprise self-service systems at The Hunter Group Inc. in Baltimore. "It takes a new class of skills to extend ERP benefits to entire systems."

ERP systems are being extended to a variety of areas: facilitating enterprisewide employee self-service, clarifying the details of business changes like mergers and moving beyond corporate headquarters to other business units.

Consulting and staffing firms see a mature but continuing market for experienced ERP professionals who can work in Web-based environments. Business experience in specific industries and business areas such as finance and human resources opens up even more opportunities.

So, what's wrong with this picture?

Some see trouble brewing in the current stabilization of the ERP market, as disenchantment sets in over ERP projects that have cost too much and taken too long. And with the conclusion of year 2000 projects, a glut of workers is entering the market. Those with experience, Web skills and specific industry knowledge will be better able to weather market changes.

Better Business Focus

Ideally, ERP systems improve business efficiency and speed in dealing with customers, employees and managers. ERP systems integrate customer relations, finance, manufacturing, inventory, sales, human resources, field service and other business areas, "getting all the systems to talk to each other," explains Sean Fleming, principal consultant at PricewaterhouseCoopers Management Consulting Services in New York. ERP can provide the framework for e-commerce and data integrity throughout a business.

"It's a huge investment, and it takes time to recoup, but it forces you to see your business more accurately," Fleming says. "You can't hide the figures." He specializes in software from SAP AG, one of the major vendors sharing the market with Oracle Corp., PeopleSoft Inc., J. D. Edwards & Co., Baan Co., PowerCerv Corp. and others.

The Hunter Group, which offers high-end ERP consulting services, sees strong demand for its consultants continuing, with salaries stabilizing com-

pared with the increases some other IT areas have seen. Consultants with one to two years of experience can expect to earn \$45,000 to \$60,000 per year. More experience can raise that figure to \$90,000. Oracle database, Perl and Java programming and additional networking skills can bump those numbers up 10% to 30%, according to Ed Ziti, a recruiter for The Hunter Group's western region.

"Companies want to use all the bells and whistles," Ziti says. That means branching out into network and electronic-business capabilities and adding employee and management self-service. Link says he sees corporate portals — organized ERP in a browser that's personalized to a user — as another area of enhancement.

Link is recruiting portal designers, strategists and engineers with ERP skills. The work requires an understanding of client/server and some mainframe ap-

The most dramatic shift in information technology is away from the client/server of 1992 to the client/server network-centric systems of ERP.

DAVID LINK, DIRECTOR OF ENTERPRISE SELF-SERVICE SYSTEMS, THE HUNTER GROUP

plications, with additional skills in C and C++, graphical user interface development and database applications like Oracle and Sybase.

Knowing the fine points of accounting and inventory control or the particular needs of the banking or automotive industries contributes to a well-rounded skill set for IT staffers in ERP positions as applications developers, software architects, project managers, engineers and marketing specialists. ERP specialists who possess a variety of strengths, including strong communications and interpersonal skills, will continue to be valuable to their organizations.

At Terra International in Sioux City, Iowa, CIO Laurie Rauch has overseen ERP implementations at the company, which provides agricultural products

and services. "It's a tough installation," she concedes. "The trouble with ERP projects is that they are very time and labor intensive. The business doesn't stay put while you are working on it." Terra staffers who were fully dedicated to the project worked with outside consultants to implement the SAP system, starting in the U.K. and at Canadian sites last year.

"Usually, clients want to build up their staff," says Fleming. "For some of the applications, the only way to get the training is to be a customer or a partner. Training and certificates [are often] only offered to clients, employees and customers. As the market gets more mature, there will be more avenues for training."

That was how Pratt & Whitney employees got their SAP training. "Our employees have the business knowledge," says Judy Roberts, manager of technical infrastructure at Pratt & Whitney, a division of United Technologies Corp. in East Hartford, Conn. They followed SAP's rapid implementation process, AcceleratedSAP, and installed the system in less than one year.

Pratt & Whitney went live with its system on July 1, and the implementation went smoothly, according to Roberts, including the integration of financial, procurement, inventory, warehousing and quality modules. "We're trying to consolidate and reduce costs overall," she says. Improved business practices ultimately benefit the airlines and air-frame builders who are the customers for Pratt & Whitney's jet engines and space propulsion systems.

Balancing Expectations

Throwing some cold water on the optimism, Tom Heffelfinger, president of Heffelfinger Associates Inc. in Boston and a 30-year veteran of technical recruiting, says, "[ERP is] not the panacea people thought. The shock has begun to set in on the costs of implementing and maintaining these systems. It's so costly that the company doesn't end up saving any money."

ERP has lost some credibility as a result, he says, but it isn't going to go away. IT professionals need mainframe skills and experience to handle the complexity of existing systems. Fleming suggests a minimum of one full cycle of experience for ERP consultants, which can take a year or more.

"The ones who can get things done are in demand," says Victor Janulaitis, CEO of Los Angeles-based Positive Support Review Inc., a management consulting and technical recruiting firm. He recommends that workers consider taking a pay cut, if necessary, to get a job that will help them hone their ERP skills. With three to five years of experience, consulting can pay handsomely, he says, citing one manager who was earning \$180,000 per year. But the intense pressure and constant travel can burn people out.

The Hunter Group assumes that consultants will travel 100% of the time. "We make it clear in the interview process," says Ziti. "It's important for people to be happy." By receiving training and vacation time, and by planning travel around airline hubs and within one time zone, consultants aren't away all the time. And they do come home every weekend.

"We want to find the people who want to change business," says Link. ▀

Willard is a freelance writer in Los Osos, Calif.

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In Search Of ERP Paybacks

Thomas H. Davenport is the author of *Mission Critical: Realizing the Promise of Enterprise Systems*, scheduled to be released next month by Harvard Business School Press.

In the book, Davenport examines the potential benefits and pitfalls of installing systems based on SAP AG's R/3 software and other enterprise resource planning applications. Recently, he talked about the challenges of such projects with Computerworld's Craig Stedman.

In Chapter 1, you talk about all the trouble and expense a company has to go through to install one of these systems. So why go to all that trouble? I think it's something that we've wanted in the information systems field since the beginning: the idea that you could have one common system throughout an organization. . . . Now the dream is a reality. It just costs a lot and requires a lot of work to change your organization. That's really the hard and expensive part.

Obviously, it's a big technology project. But in your book you say it's not a good idea to manage an enterprise system project the same way you would other IT initiatives. Why? Because it's all too difficult to handle the technology stuff. It becomes all too easy to just slip into the notion that this is a technology project, and once we get it installed we'll have finished and succeeded. Going live [in and of itself] is really not worth very much. If you treat it as a business project, then you have some hope of getting back your investment and a whole lot more. Otherwise, it's not worth the money, and you should stick with your unintegrated and not-very-sophisticated legacy systems.

How many of the companies that you've worked with or researched get the kind of business value they're looking for? In some ways, I feel like this book is late, because a lot of companies are coming pretty close to "finishing" their technical implementation. But it's still early from a business standpoint, because a lot of these things take a really long time to play out. I

talk a lot in the book about Dow Chemical as basically a 10-year journey to get the kind of business value that they got out of it.

You say it requires a long-term view, sometimes a decade or more. How do you sustain a project for that long? You have to let your [business] managers know what they're getting into. That's another example of why this is not just another computer system. You've got to let people know that this is a way of life, and not a single project. You really have to see it as a series of projects.

You talk about using the information in these systems to better manage your business, as opposed to just automating operations. But there's not a lot of that being done. Not enough of it, certainly. But just as you need to plan for the operational changes, I think you need to plan for the management changes. It's a little bit of a cop-out to say that we're going to wait until we're finished with [an] implementation. . . . If you're not managing with this data, you're not managing with the best data available.

You say the greatest potential payback of an enterprise system is in supply-chain management. How so? The companies I found that really did measure benefits had big benefits around inventory reduction. There's big working capital tied up in inventory, and a lot of that can go out the door. You can start to see a lot more of the costs in the supply chain.

Are the rapid-deployment methodologies developed by application vendors good for users? Can you really install one of these systems in six to nine months? Yeah, you can. But what you can't install in six to nine months is a substantial amount of business change. I don't blame the vendors and the consulting firms for coming up with these approaches. But I think if you're a user you have to balance the speed of implementation with the value you're going to get. And it pretty



SETH RESNICK

WHO IS HE?

Thomas H. Davenport is director of the Andersen Consulting Institute for Strategic Change and a professor of information management at Boston University. He previously taught at the University of Texas at Austin.

much guarantees a vanilla implementation that's not going to deliver any specific business value.

There's been a lot of publicity recently about problem installations at companies such as Hershey Foods Corp. What's usually to blame: the complexity of the software or bad planning and project management? I think there was a lot of business change at once, and maybe too much business change at once, in some of these organizations. Probably not enough time [was] spent on educating people on how the new systems

and processes were going to work. I think the best companies spend a huge amount of money on [that].

Why do most people underestimate the amount of training and education their workers need? One, because this is an order of magnitude bigger than any systems change they've ever seen. And two, because it's something we've always done. It's a time-honored tradition in business to think that technology by itself will achieve a certain level of change. It's just the feeling that technology conquers all. ▀

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Moving from Talk to Action

Companies that aggressively—and judiciously—follow the right formula stand to prosper, by *Ian Hayes, Conference Chairman and President, Clarity Consulting.*

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Buyer Beware

Selecting best-of-breed suppliers by *Stephanie Moore of Giga Information Group.*

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Helping Hand

How to outsource your e-Business while maintaining control, by *William Martorelli of the Hurwitz Group.*

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E-Sourcing Insight

The latest e-Sourcing options explained by *Gopi Bala of the Yankee Group.*

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SMARTsourcing

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Pratt & Whitney
Chemical Systems

About BrainStorm Group

Based in Northboro, Massachusetts, BrainStorm Group, Inc. was founded in 1997 by Gregg V. Rock with the intent of establishing itself as the premier producer and developer of high technology conferences and events. In addition to the SMARTsourcing Conference, the e-Business Strategy Conference Series and the XML Leadership Series, BrainStorm Group offers a set of integrated services in the areas of proprietary conference development and the outsourcing of content development, sales, event marketing and management for the high technology marketplace.

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Gregg V. Rock

President & Founder,
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Over the past few years, we have seen the beginning of what promises to be the greatest transformation of business and the economy that has ever occurred. Whether they are "dot com" start-ups or traditional "brick and mortar" operations, companies are embracing e-Business with a vengeance. Already the rules of the game have changed. No longer can a company do everything itself. Success comes from drawing together the best mix of business, technical and creative people and ideas.

SMARTsourcing is the evolution of outsourcing to meet these new challenges. It is the application of skilled external resources to supplement and support a corporation's IT initiatives. Rather than try to handle all of their technology needs themselves, corporations concentrate on their core competencies and source additional requirements to the appropriate SMARTsourcing providers. These providers have world class competence in the services they support. The end result is greater than the sum of its parts. The corporation gains premiere IT capabilities without excess overhead and diversion from its core mission.

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The SMARTsourcing Conference & Expo Series is the only forum providing Business and IT decision-makers with comprehensive coverage of the entire services landscape from e-Business Outsourcing to traditional IT Outsourcing services.

Held concurrently with our e-Business Strategy Conference Series—these events provide conference attendees with all the tools necessary to ensure the success of their e-Business initiatives from vision to implementation.

Attendees can expect to leave BrainStorm Orlando with an e-Business game plan. A mindset for strategy development, a roadmap for implementing their vision and the tools for selecting and managing a virtual team. These lessons will be reinforced throughout the conference in real world, end-user case studies.

e-Business Services Solutions Guide

The e-Business Services Solutions Guide is the official publication of BrainStorm Group's SMARTsourcing & e-Business Strategy Conference Series. Featured in this Guide are insightful articles including:

- ▶ *Giga Group's Stephanie Moore, Director of e-Business Services*, outlines a selection criteria for selecting best-of-breed suppliers. Page S-5
- ▶ *Ian S. Hayes, SMARTsourcing & e-Business Strategy Chairman and President of Clarity Consulting*, discusses the importance of a defining e-Business vision in his article "Moving from Talk to Action." Page S-5
- ▶ *Hurwitz Group's Bill Martorelli, Vice President of e-Services & Sourcing Strategies*, provides insight on how to outsource while still maintaining control of the business. Page S-6
- ▶ *The Yankee Group's Gopi Bala, Director of Management Strategies Planning Services*, explains the latest e-Sourcing trends and how to leverage them for your e-Business initiatives. Page S-7
- ▶ An overview of our upcoming conference programs can be found on the facing page. Visit our web site at www.brainstorm-group.com for a complete conference agenda and list of presenters.



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FEATURE KEYNOTE



Philip Evans, Author

Blown to Bits: How the New Economics of Information Transforms Strategy
Harvard Business School Press

Join Philip Evans to discuss how the new economics of information define the managerial agenda of the coming decade.

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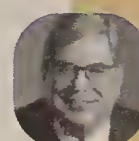
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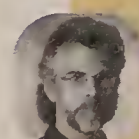
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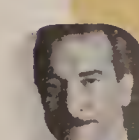
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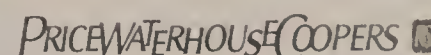
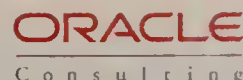
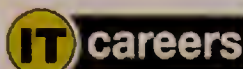
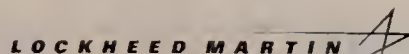
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MOVING FROM TALK TO ACTION

Everywhere you turn, people are talking about e-Business. Another holiday season has passed with record on-line sales, and the buzz around January's Superbowl game was as much about splashy and pricey "dot com" ads as it was about football. Any company that can tie its fortunes to the Internet seems to enjoy stratospheric market valuations. But despite hype and magazine cover articles, e-Business talk exceeds action for most companies. Reality lags several steps behind the potential for everyone except the market leaders. While recent surveys have shown that virtually every company has considered e-Business, the majority of corporate e-Business initiatives remain in the "brochureware" or experimental stages. A small handful of companies and industry sectors are proactively pushing the bounds of e-Business, setting the bar that others must reach.

Despite ample proof that the big winners in the e-Business market are the innovators and pacesetters, many companies remain incremental and reactive in their e-Business strategies. Why? As Nicolo Machiavelli once said, "there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things." Building fancy web sites is easy, but translating abstract notions of content richness and market reach into action takes vision, strategy and perseverance.

Vision, especially, seems hard to come by. Devising ideas with the power to reshape markets, revamp supply chains or revolutionize operations takes more than a team of web developers. It takes a broad view of the market, awareness of best practices, business and industry knowledge and no small measure of creativity. It takes a willingness to think out of the box and a desire to learn everything possible from the successes of others. Vision is the idea that excites everyone who hears it. It gives direction and purpose. Vision is apparent when one considers the market leaders from Amazon to Yahoo. Without a defining e-Business vision, a company cannot hope

that its efforts will ever be more than incremental.

From vision comes strategy. Strategy provides the plans for translating vision into action. In the world of e-Business, strategy includes far more than just technology. It includes setting and owning

the standard for an industry. It requires the active participation of executives, marketing, operations and IT. It involves partnerships and affiliations. Gaining the best possible assistance is imperative. Combining the best possible thinking and insights

from inside and outside the company creates the most successful strategies.

As any entrepreneur can tell you, perseverance is the final key to success. Don't give in to naysayers or setbacks. The future of e-Business is wide open to those individuals

and companies willing to move beyond the ordinary. ■

President of Clarity Consulting & Chairman of the SMARTsourcing & e-Business Strategy Conference Series, Ian Hayes works with corporate & IT executives on business & technical issues. To contact Ian: ian_hayes@clarity-consulting.com.

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Feature Keynote, Philip Evans

Author, *Blown to Bits: How the New Economics of Information Transforms Strategy*,
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Stephanie T. Moore, Director of e-Business Services at Giga Group

NOT ALL INTERNET IT SERVICES FIRMS ARE CREATED EQUAL

Stephanie T. Moore is an analyst covering e-business consultants and service providers, as well as legacy renewal and web-to-host access tools and technologies. Stephanie has also served as Giga's Y2K analyst. In that capacity, she has advised hundreds of client companies about Y2K strategies, tools, technologies, vendors and methodologies.

Traditional enterprises that can develop and implement e-Business strategies will be able to leverage existing advantages in infrastructure, financial stability, supplier relationships, and customer relationships into successful competition against 'dot-com' companies. But most traditional enterprises do not yet have the experience or skills necessary to implement technology that will support an e-Business strategy. If traditional business is to reinvent itself, those sets of skills will have to come from staff retraining, recruitment, and the use of external sources.

Some companies will look to traditional systems integrators for these skills. But others are skeptical of the ability of these firms to deliver new e-Business services quickly. Instead, they are beginning to look to the emerging Internet IT services firms for the necessary capabilities. But buyers need to beware – not all Internet IT services firms are created equal. Most do not have the breadth of skills necessary—strategy consulting, creative design, internet architecture, application development, legacy integration, and operations outsourcing—to develop and support the overall e-Business needs of traditional enterprises. Rather, the majority have expertise in one or two areas, making each vendor very different in terms of their capabilities and making few of them appropriate for the total e-Business enablement project.

Potential customers of these firms must be able to distinguish between the design/creative-focused players; the technology-focused firms; and the firms that are building a broad set of capabilities across strategy, technology, and design. Most traditional enterprises will be looking for a mix of skills, but it doesn't automatically follow that having all these various capabilities inside a single firm is the right approach. Some are going to ally with like-minded partners, because it will be very difficult to provide all things to all

customers. Specialization will be a successful strategy for services providers; selecting best-of-breed suppliers will be a successful strategy for customers.

Companies seeking assistance with e-Business strategy and implementations should

be seeking answers to the following questions:

1. Has the service provider worked with similar companies in the same industry?
2. What is the firm's approach to creating an e-Business strategy?
3. What are the core technical

competencies of the services firm?

4. Who are the consultants who will actually be working on the project?
5. What process does the service provider have in place for utilizing internal client staff?
6. How comprehensive is the

service provider's methodology?

7. How will the service provider deal with IT culture clash?

8. Is the service provider available in your time frame and at a price you can afford? ■

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The company's Application Outsourcing solution, under which it assumes full accountability for ongoing maintenance, support, and enhancement of production systems, provides a powerful response to the business challenge of managing application portfolios.

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- Streamline maintenance and support operations
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The Benefits

Keane's Application Outsourcing solution enables clients to manage their application portfolios as a critical business asset. Key benefits include:

- Tighter control of IT maintenance and support operations, enabling focus on big-picture IT issues
- Reduced costs associated with application management, contributing to improved bottom-line performance
- Improved user satisfaction based on targeted improvements in service as well as software quality
- Increased availability of key resources to focus on new development initiatives
- Support for newly deployed applications, enabling quicker return on investment.

William P. Martorelli, Vice President of e-Services & Sourcing Strategies for Hurwitz Group

HELPING HAND

William P. Martorelli is Vice President of e-Services & Sourcing Strategies for Hurwitz Group, Inc., an analyst firm specializing in strategic business applications. He has over 15 years' experience analyzing and evaluating technology and marketing strategies for IT organizations in Fortune 500 companies, software products companies, and consulting firms. His background includes research, consulting, and commentary on the information technology field. Martorelli holds a BS from Northwestern University, Evanston, Ill. He is a frequent speaker on topics relating to systems integration, outsourcing, IT management and software development. His work has appeared in *Datamation*, *Information Week*, *InfoServer Canada's Financial Post*, and *UK's Financial Times*.

Q: Why do companies outsource components of their e-Business?

A: Companies are facing time to market issues to formulate e-Business strategy. E-Business requires specific skill sets, infrastructures, scalability and network infrastructure. This breadth of necessary functions has convinced many companies to look externally for their e-Business infrastructure requirements. There are many options that customers have as they formulate their e-Business strategies.

Q: What types of options do companies have for outsourcing their e-Business?

A: As for managing internet structure, you can look at doing it all yourself, or you can look at co-location, which allows you to manage your own servers but on another company's data center facilities. The third option would be full outsourcing, where you allow another company to manage the whole thing for you. Services ranging from digital strategy to managing infrastructure are available.

Q: What's the downside of doing it yourself?

A: You may feel that e-Business is very strategic for you, so therefore you may want to maintain it in house and provide your own security. But, for starters, you may be in for a great deal of cost when you try to provide scalability within your own data center, whereas commercial data center providers have built in the necessary scalability. You may also incur a significant time burden, which in turn may compromise your time to market.

Q: What are the benefits of co-location?

A: Co-location provides a nice middle ground for managing internet infrastructure. It allows you to take advantage of the scalability built into the data center

provider. It also offers you a number of a la carte services that the co-location provider has available. It's an attractive solution for organizations that aren't willing to sacrifice full control.

Q: Where does full outsourcing fit into a company's needs?

A: Outsourcing can help you with the time to market issues because you are leveraging the skills of the suppliers. You can have someone build your application for you, host

it, and build your whole e-Business infrastructure. However, as e-Business becomes "business as usual", it's critical that companies retain a tight grip on their e-Business vision and strategy. ■

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Mission Statement

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Strengths

- Exclusive provider of the complete range of enterprise e-business applications for both traditional implementations and ASP model
- Holistic view of e-business based on our breadth and depth of technology, marketing and strategy
- Successful track record of rapid implementations that allow our customers to "go to market" quickly and profitably
- Over 750 experienced, senior-level consultants
- Successful implementation of over 100 enterprise-wide projects worldwide
- Premier level partnerships with "best of breed" ISVs and other technology providers
- Client teaming approach

Target Market

Primarily mid-tier (\$300M - \$1.5B) to large (> \$1.5B) enterprises, though the company also targets high growth "dot com" start-ups

Sample Clients Include:

ARCO, Australia Post, Autodesk, Blue Cross/Blue Shield, Bombay, Comp USA, DaimlerChrysler, Daughters of Charity, Drypers, Fujitsu, GTE, GE Capital, Kirby Risk Electrical Supply, Louisiana Dept. of Wildlife & Fisheries, Nissan, Nortel Networks, Oxford University Press, Santa Clara Valley Transportation Authority, Snowbird Ski and Summer Resort, SBC Communications, Sony, St. Louis Public Schools and Virco Mfg. Corporation.

Gopi Bala, Director of Management Strategies Planning Services at The Yankee Group

E-SOURCING INSIGHT

Gopi Bala is director, management strategies research practices at The Yankee Group. As a keen observer of the e-business scene, he has had first-hand experience dealing with both large and small companies moving into e-business and e-sourcing. He discussed his views on e-sourcing during a recent interview.

Q: How do you define e-sourcing?

A: The sourcing of Internet related IT services is what we call e-sourcing. You've got traditional IT services, which range from consulting, to systems integration, to outsourcing, to traditional technical support. When you bring it into the Internet regime, you have new developments—internet data centers, for example. In applications outsourcing, traditionally you had application development and maintenance, and managed application services. Now there is the ASP market, wherein the applications service provider leases or rents applications 'by the drink'. Couple it with internet integration services and Internet based support and you have e-sourcing.

Q: What e-sourcing options are available to companies?

A: Based on their individual needs, companies have three major categories of e-sourcing offerings to select from: internet integration services, e-support services and e-solution outsourcing.

Q: What functions would a company gain with e-support?

A: E-support is the IT services and support needs which include everything from help desk to disaster recovery. This is a very important area of e-sourcing because when a site goes down, it can potentially lose millions of dollars in business. Users are only a click away from one site to another—you can go from one pet store to another, from one toy store to another from one service provider to another. Each of these businesses on the web absolutely can't go down. Highly available doesn't make sense any more—we need fault tolerance. Fault tolerance means 100% business continuity, available anywhere on a 7x24 x 365 basis. That means the e-support must be global. The Web enables that, so you don't have your entire help desk facility or your call center located inside the walls of the company. You can have a third party to provide

those services remotely through the network.

Q: Where does e-solution outsourcing fit into the mix?

A: E-solution outsourcing is traditional outsourcing brought into the e-era. For example, it can include applica-

tion service providers that provide applications over the Web through the network located in an Internet data center. There are many flavors of ASPs, they can provide anything from office applications to e-mail. Traditional outsourcing has

been around for at least 10 years and has run its course. But in the whole e-arena these and other SMARTsourcing services are providing the development and management of an e-business infrastructure for a customer.

Q: How will the conference help attendees understand these areas?

A: Organizations looking to evaluate their e-sourcing options should plan to attend BrainStorm Group's Orlando Event. ■

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Get real! Today, *virtual* is an outdated word

"THAT'S VIRTUALLY impossible," I told my mother. "There's no way I'm going to be able to get that done in time."

"It was a virtual nightmare," the woman on the bus was saying. "You should have seen the crowds." Sound strange?

Yes, once upon a time, we all used the word *virtual*, and it had nothing to do with the Internet.

When we said it was a virtual community, we meant that it was, in essence, a community.

When we said we were virtually finished, we meant we were almost, practically, very nearly done. That's what *virtual* has meant since, oh, about 1654, according to Webster's Collegiate Tenth.

But fast-forward to the days of e-commerce — circa the late 1990s — and you get a new meaning that loosely translates as *Internet-enabled, electronic (e-)* or even just *Web*.

Why pick *virtual*? It has that nuance of something ethereal. E-commerce mavens may have sought to capture the otherworldly concept of credit-card numbers being zapped through space to order merchandise, the digital image of which a

shopper has seen only beamed from afar.

But it's still a pretty big stretch from the traditional meaning of *virtual*, so I question how many people ever knew what it originally meant. Plus, those same mavens are now scrambling to make everyone comfortable with all things Internet, reassuring them that it's safe, it works, it's as good as a home-cooked meal. They shouldn't want to refer to it as *virtual*.

Speaking plainly — using *Web* or *Internet* or *e-* — would work much better.

Now, virtual storefronts, shopping carts and so on aren't the first *virtual* terms to spring from technology advances, even if they stray the furthest from the word's meaning.

In 1959, we got virtual memory: external memory for a computer that worked as if it were part of the computer itself. This memory operates virtually (in essence) as if it were part of the main machine.

In 1989, along came virtual reality, those machines we all know and love that you put your head into to experience something fake as if it

were real. So close to real, in fact, that it's virtually — almost — real, even while it's plainly "an artificial environment," says Webster's, "in which one's actions partially determine what happens in the environment."

Yet that metaphor doesn't carry over well to virtual banks, virtual malls and virtual customers. Those entities aren't almost real: They are real.

Even if the Internet and its marketplaces are

more abstract than malls and main streets, they are concrete businesses nonetheless. To call them otherwise is virtual nonsense — in the conventional sense of the word. ■



Does any high-tech jargon leave you steamed? Or smiling? Tell ANNE McCRORY, former *Computerworld* copy desk chief and now news editor. Contact her at anne_mccrory@computerworld.com.

CONFERENCES

■ DIRECTIONS: VALUE PROPOSITIONS FOR E-BUSINESS 2.0

San Jose Convention Center, March 6, and Hynes Convention Center, Boston, March 16. Get insights and predictions from International Data Corp. (IDC) analysts on who will be the winners and losers among vendors, products, technologies and strategies. **COST:** \$875 (either session) **CONTACT:** IDC in Framingham, Mass., (800) 343-4952; fax: (508) 935-4789 www.idc.com/events/dir00

■ THE SIXTH INTERNATIONAL CONFERENCE ON PRACTICAL SOFTWARE QUALITY TECHNIQUES

The Renaissance Hotel, Austin, Texas, March 13-17. Information technology professionals at this conference can share experiences that may help them solve software quality problems. **COST:** \$795 to \$1,645 **CONTACT:** Software Dimensions in Inver Grove Heights, Minn., (651) 552-0716; fax: (651) 552-0791 www.psqtcconference.com

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Millennium Broadway, New York, March 15-16. What challenges lie ahead in the workplace, and how can leaders and employees prepare for them? **COST:** \$1,425 for Conference Board associates; \$1,625 for others **CONTACT:** The Conference Board Inc. in New York, (212) 339-0345; fax: (212) 836-9740 www.conference-board.org/worklife.htm

■ MANAGING TCO EFFECTIVELY: BRIDGING THE GAP BETWEEN BUSINESS AND IT

Hyatt Regency, Dallas, March 15-17. Learn how much of a role total cost of ownership plays in corporate IT and how you can balance it with business needs. **COST:** \$1,395 for Gartner Group Inc. clients; \$1,695 for others **CONTACT:** Gartner Group in Stamford, Conn., (800) 778-1997 or (203) 316-6757; fax: Ashley Pearce, (800) 778-1998 or (203) 316-6474 www.gartner.com/tco/usa

■ WEBSOURCING 2000 CONFERENCE & EXPOSITION

Hyatt Regency at San Francisco International Airport, March 16-17, and Sheraton Chicago Hotel and Towers, April 26-27. Examines outsourcing and hosting strategies for the Web. **COST:** \$995 for San Francisco; \$895 before March 21 for Chicago; \$995 after March 21 for Chicago **CONTACT:** Intermediagroup in Westboro, Mass., (508) 870-5858, Ext. 20; fax: (508) 870-6521; e-mail: imgcorp@intmedgrp.com www.intmedgrp.com/websource

■ SD 2000 (SOFTWARE DEVELOPMENT CONFERENCE & EXPO)

San Jose Convention Center, March 19-24. Learn about new programming languages, enterprise development, platform tools and Internet tools and technologies, and their impact on future development. **COST:** \$1,595 **CONTACT:** CMP Media in San Francisco, (415) 905-2702; e-mail: sd2000@mfi.com www.sdexpo.com

■ SOFTWARE ENGINEERING PROCESS GROUP CONFERENCE

Washington State Convention and Trade Center, Seattle, March 20-23

Focuses on how to make software better.

COST: \$645 by Feb. 23; \$745 by March 8; \$845 after March 8 **CONTACT:** Software Engineering Institute at Carnegie Mellon University, Pittsburgh, (412) 268-1587; fax: (412) 268-5556; e-mail: marketing@sei.cmu.edu www.sei.cmu.edu

■ SANS2000 (SYSTEM ADMINISTRATION, NETWORKING AND SECURITY CONFERENCE)

Omni Rosen Hotel and Convention Center, Orlando, March 21-28. The latest technology for those who manage and secure systems and networks. **COST:** \$845 to \$3,095 **CONTACT:** SANS Institute in Colorado Springs, (719) 599-4303; fax: (719) 599-4395 www.sans.org/sans2000/sans2000reg.htm

■ BRAINSHARE 2000

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■ INTERNET COMMERCE EXPO (ICE)

World Trade Center, Boston, March 27-30. A showcase of applications, tools and back-office products and services for e-commerce. **COST:** \$1,050 until Feb. 25; \$1,150 after Feb. 25 **CONTACT:** IDG World Expo in Framingham, Mass., (800) 667-4423; e-mail: jill_mott@idg.com www.iceexpo.com

■ HIGH-TECH WORKFORCE 2000 CONGRESS

Atlanta Hilton & Towers, March 29-31. Recruiting, retaining and developing high-quality IT employees, with views from more than 30 industry experts. **COST:** \$1,495 **CONTACT:** International Quality & Productivity Center in Little Falls, N.J., (800) 882-8684 or (973) 256-0211; fax: (973) 256-0205; e-mail: info@iqpc.com www.iqpc.com

Tracking Stocks

BY ROBIN ROBINSON

WHEN IS AN initial public offering (IPO) not an IPO?

When the stock is issued under the protective wing of its parent company as a tracking stock.

Companies set up a tracking stock by bundling similar businesses and divisions together and filing their plans to sell the stock with the Securities and Exchange Commission (SEC). The SEC then goes through a regulatory approval process similar to that for an IPO.

Tracking stocks differ from regular common stock in a key way: All assets of the business traded as a tracking stock are held by the parent company — not the shareholders of the tracking stock.

Owners of the tracking stock benefit from the rising per-share prices of the tracking stock. The parent company often retains some shares in the tracking stock.

For example, General Motors Corp. owns 68% of GMH, the tracking stock for its Hughes Electronics Corp. subsidiary in El Segundo, Calif. Revenue from Hughes Electronics rolls into GM's income, which wouldn't happen if GM had spun it off as a separate entity.

Tracking stocks have been around since 1984, when GM issued separate shares of its then-subsidiary Electronic Data Systems Corp. in Plano, Texas.

Last year, there were more than a dozen new or pending tracking stock issues. This year shows no letup, with another four issues already announced.

For example, Framingham, Mass.-based office-supplies distributor Staples Inc. last year filed with the SEC to create a tracking stock for its Internet business, Staples.com. And in January, The New York Times Co. announced it was filing to create a tracking stock for its Internet business, Times Company Digital in New York.

The reasons for setting up a tracking stock haven't changed during the past 17 years, according to Barbara Byrne, manag-

DEFINITION:

A **tracking stock** is created by a company that wants a separate market valuation for a business unit whose operations are somehow separate from the main company's core business. Typically, the tracking stock is in a growth industry, such as an e-commerce unit spun off from a traditional company. The parent company continues to control the assets of the business unit, while benefiting from investors' heightened interest in the tracking stock's industry and expected growth.

ing director at Lehman Brothers Inc. in New York. She was involved in setting up that first tracking stock, GME.

"It gives them another horse to ride in the [stock] market," Byrne says. A company may set up a tracking stock, rather than spinning a unit off into a publicly held company, because it wants that line of business to diversify its core holdings. By maintaining control over the business unit, the shine on that tracking stock's growth reflects back on the parent company, she says.

Byrne says mature companies are realizing they can create value by being involved in the Internet economy through tracking stocks they create from their high-tech businesses. On the other hand, she says, she doesn't think the explosion in dot-com stocks is causing an increase in tracking stocks.

Focused Markets

Hughes Electronics, created by GM in 1985, and Redmond, Wash.-based AT&T Wireless Group, a pending tracking stock created by AT&T Corp., are examples of tracking stocks focused on one area of a company's services.

"It allows us to get some investors that we might not ordinarily have: people not interested in the auto business, but interested in what Hughes is doing," says Richard Dore, director of corporate communications at Hughes Electronics.

"The benefit in owning a tracking stock is that it's in an industry you're excited about, it's in a high-growth business, but you don't want to own the parent company," Hughes, which includes DirecTV Inc., satellite

communications, allows the parent company to distribute greater value to its shareholders through the higher share prices of the growing business unit. At the same time, the parent company can diversify its

Public Issuance of Tracking Stocks

Companies can issue a separate stock for a business unit while still owning its other assets. Most let the tracking stock trade on its own for years, but some decide to redeem the stock by buying it back or to split it off into a separate company.

ISSUER	TRACKING SECURITY	DATE OF ISSUANCE
AT&T	Liberty Media	1999
Donaldson, Lufkin & Jenrette	DLJdirect	May 26, 1999
MCI WorldCom	Spint PCS	pending
Snyder Communications	Circle.com	Oct. 25, 1999
Disney	Go.com	Nov. 18, 1999
Staples	Staples.com	pending
J.C. Penney	Eckerd	pending
Du Pont	Life Sciences	pending
Excite@Home	At Home Access Business	pending
REDEEMED/SPLIT-OFF		
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and wireless businesses, is seen as a growth stock, while GM is considered more mature and less likely to grow in value quickly, he says.

Creation of the separate publicly traded stock, especially in a growth industry like com-

holdings beyond its own stock, which may be in a mature, undervalued industry, Byrne says.

The parent company can buy other companies using the capital raised by issuing the tracking stock, without raiding its own treasury for cash or

selling more shares of its own stock, thus diluting the value of each share. Tracking stocks also give companies a way to create incentives for executives in growing business units. By offering executives options in a tracking stock, the company closely ties the executives' compensation to the performance of the business unit. Byrne describes Burbank, Calif.-based The Walt Disney Co.'s November issuance for Sunnyvale, Calif.-based Go.com as an example of a tracking stock created for this purpose. ▀

Taking Stock

Of the nearly 40 tracking stocks announced since 1984, all but five remain tracking stocks, reflecting their parent corporations' expectations that they may have more potential on Wall Street than the parent company's.

Hughes Electronics, a business unit of General Motors and a GM tracking stock since 1985, is an example. "We believe Hughes is the process by which we're going to introduce advanced communication into automobiles, so it behooves us to continue to hold it as a tracking stock," said Catherine Dunsby, manager of financial communications at GM.

But tax implications, a change in strategic direction or a shift in the business climate can lead a company to spin off a business unit underlying a tracking stock, creating an independent company, Dunsby said. That's what GM did with EDS. It had been a GM tracking stock since 1984, but GM spun it off in June 1996.

When a tracking stock is split off, the parent company offers its shareholders the option of exchanging their stock in the parent for stock in the new company, Dunsby said.

If a company doesn't want to turn the business unit into a separate company, but no longer believes the business unit has value as a tracking stock, it may decide to redeem it by buying back the shares.

— Robin Robinson

JOE AUER/DRIVING THE DEAL

Start with team effort

USING A MULTIDISCIPLINARY NEGOTIATING TEAM can go a long way toward ensuring that your high-tech procurement process is a success. There's no better way to counter what you'll face on the other side of the bargaining table: the supplier's highly

trained team of full-time sales and negotiation professionals, who are working to make sure the supplier assumes as little risk as possible and maximizes its financial gain.

The cross-functional team concept seems basic since an IT deal involves a range of disciplines. But its success depends on selecting the right team members because the team must have the correct mix of skills and professional disciplines for the particular project at hand.

Think in terms of two components when developing a procurement team. The first is the *core team*, the second the *advisory team*. The core team is a subset of the advisory team and manages the procurement process itself, conducts the negotiations with the vendor and delivers the deal. The advisory team identifies the objectives for the procurement, helps prioritize

them and provides ancillary support when needed, such as legal opinions, advice on risk management issues and senior management backing, support and sponsorship. But it generally doesn't take a day-to-day role in the project.

The core team should include the following members: **Business group representative.** The procurement is being carried out for the benefit of a particular business group. That group must have representation on the team to establish success criteria. The team needs a complete and clear understanding of business requirements.

Procurement representative. This representative should understand and guide the team through the negotiation process. Ideally, this person will have a high degree of negotiating skill and can serve as the project's lead negotiator.

IT representative. This person

understands the technology behind the supplier's offering and generally serves as the technological lead for picking a supplier.

Finance representative. A "numbers person," who can make financial comparisons of competing suppliers' offers, is a must. You must be concerned with such issues as taxes, interpretations of applicable accounting rules and required rates of return for projects.

Depending on the project's size and complexity, there may be more representatives from business and technology on the team.

The advisory team should have representation from: **Legal.** Good legal advice is essential even if you're using your own form contract. If you're willing to consider the potential supplier's form agreement, you should perform a complete legal review before any negotiations

begin. Key areas your attorney should always review include warranties, remedies, ownership rights, indemnifications, license rights and liability limitations.

Risk management. This area is often overlooked. It's important to understand your company's tolerance for risk.

Your company probably has standard insurance requirements for suppliers that must be incorporated into all contracts.

Technology deals involve additional risks that can be insured against, including errors and omissions insurance provided by the supplier (with the customer being the beneficiary) or insurance for theft of any customer property by a supplier's employee.

Technology. Projects using complex technologies should also include your technical gurus. Unlike the core team's technology rep, these team members should understand not only the contemplated technology

but also its relationship with your existing infrastructure and future directions.

Senior management (or a key player who might second-guess your deal later). Get 'em on the team from the start. You need senior management's support and authority to ne-

gotiate. A good rule of thumb is to choose the management person with whom the vendor has developed a relationship. Sometimes suppliers will try to manipulate these relationships to get the senior manager to forgo the procurement team's financial and contractual concerns. Getting that manager on your team helps

counter this ploy.

Deciding who's on the team is the critical first step in a successful negotiation project. Identifying the skills required, selecting the personnel and obtaining a commitment of support until the project is complete makes the job of negotiating much easier, less risky and more effective. ▀



JOE AUER is president of International Computer Negotiations Inc. (www.dobetterdeals.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at joea@dobetterdeals.com.

BRIEFS

Kozmic Coffee

New York-based Kozmo.com Inc., an online delivery service company, has announced a five-year co-marketing agreement with Seattle-based Starbucks Corp. The deal will garner Starbucks \$150 million from Kozmo.com and will provide the Internet retailer with publicity in Starbucks' coffee shops. In return, Kozmo.com will sell Starbucks coffee over the Internet.

E-Commerce Glitch

Thomas & Betts Corp., an electronics components manufacturer in Memphis, is blaming shipment delays and a nearly 50% drop in income last

year on problems with a new Internet-based ordering system.

In addition to \$20 million in delayed shipments, the company said its failure to launch its new Thomas & Betts Order Processing System until fiscal 2000 resulted in almost \$24 million in lost sales and \$18 million in increased freight and labor charges for the year.

Women's Web

London-based consumer products company Unilever PLC and New York-based iVillage Inc. will dedicate \$200 million toward a joint venture that will provide online personal care products and services to women. iVillage, an online community for women, will offer its tech-

nology and online beauty resources, while Unilever will provide sponsorships. Though Unilever is the company behind such brands as Dove soap and Vaseline skin care products, the new venture will offer beauty products from a variety of manufacturers and will be independently managed, Unilever said in a prepared statement. The company will be based in New York.

Social Security Online

On March 1, the Social Security Administration (SSA) plans to launch an electronic newsletter designed to guide Social Security recipients toward benefits information. An e-mail address is required to start a subscription, and the site will offer subscribers the ability to customize their free monthly updates.

The newsletter's Internet address is www.ssa.gov/enews.

Sprint Backs Battery Operating System

Sprint PCS Group in Kansas City, Mo., said it plans to promote the Battery Operating System from Enrev Corp. in Norcross, Ga., for use by its digital phone customers. The technology, now used in some industrial handhelds, allows quicker charging times and extends battery life up to three times [Technology, May 31, 1999].

Web-Based Shipping

Eastman Chemical Co. in Kingsport, Tenn., and Global Logistics Technology Inc., a software start-up in Shelton, Conn., last week said they're forming a company to offer Internet-based shipping and logistics services to manufacturers and

distributors of chemicals. Eastman also plans to outsource its own logistics operations to the new venture, which will be called ShipChem.com. It's scheduled to open for business during the second quarter. www.glogtech.com www.eastman.com

ERP on the Internet

Damgaard A/S, a Danish vendor with U.S. offices in Atlanta, last week announced an upgrade of its Windows-based enterprise resource planning (ERP) software with a new self-service module that lets users open up their systems to customers via the Internet.

The Axapta 2.1 upgrade also adds support for three-tier setups that off-load processing requirements from end-user PCs, Damgaard officials said. www.damgaard.com

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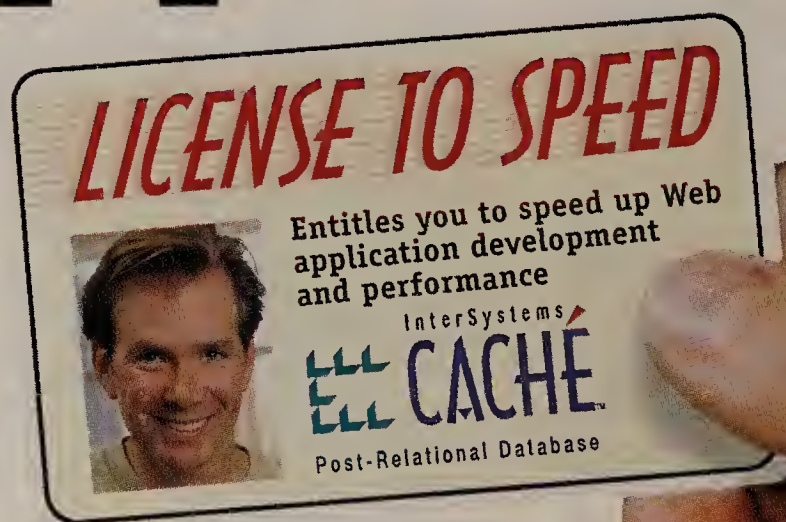
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TECHNOLOGY

DATABASES WITHOUT DISKS

In-memory databases have been around for years, but they're now getting more attention because they're faster than disk-based databases. But some worry that they'll lose crucial information during system crashes. **58**

VOICE OVER IP

Vendors are touting voice over IP, but analysts say it will be another five years before it replaces standard phones in most companies. **64**

LINKS FOR FORTE

With the help of Indian software companies, Sun Microsystems will be offering adapters that link a variety of applications to its Forte Fusion Enterprise Application Integration suite. **60**

CENTRALIZED SECURITY

Keeping your systems and networks secure often means tracking inputs from a jumble of monitoring devices and tools. Du Pont and other companies are centralizing security so they can more easily monitor and respond to hacks wherever they occur. **56**

EASY STORAGE

StorageNetworks eventually wants to make getting more storage as easy as plugging in a lamp. As a first step, the company has announced a secure portal that gives customers access

to storage resources and to information about how those resources perform. **61**

TALKING HEADS

A Los Angeles start-up is rolling out Web-based news delivered by an animated anchor. The real news may be the bandwidth-saving tools used to develop the newscasts — tools that may be available for purchase soon. **58**

HANDS ON

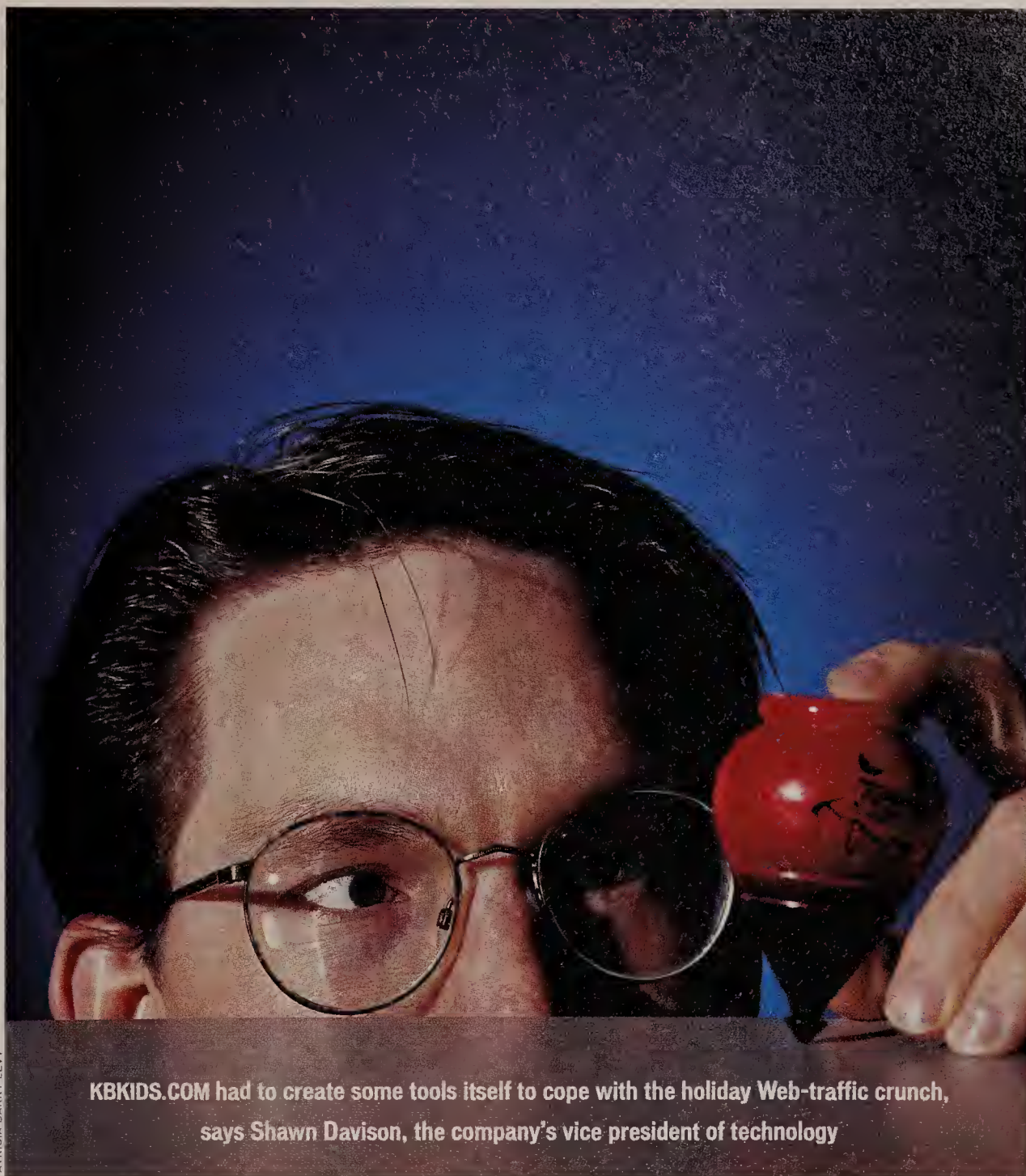
Senior reviews editor Russell Kay has found a Windows clock utility that works great, a nifty product for updating area codes in your contact manager and a Universal Serial Bus FM receiver that... well, maybe you'd better read for yourself. **62**

BOLDFISH'S BULK E-MAIL

BoldFish's bulk message-handling system streamlines high-speed, high-volume e-mail and fortifies outbound messaging servers that were never intended to handle such big loads. And that's good news for IT, because e-mail is proving to be one of the best ways to keep in touch with customers. **70**

QUICKSTUDY

Everyone wants faster wireless access, and vendors want to provide it through something called 3G. But nobody knows just what technologies this involves or which applications will be most important. **63**



KBKIDS.COM had to create some tools itself to cope with the holiday Web-traffic crunch, says Shawn Davison, the company's vice president of technology

I SURVIVED E-CHRISTMAS

AND LUCK WAS ONLY PART OF IT. Three online retailers tell how they kept their sites up and running during the holiday shopping season. They say they did it by choosing their tools carefully, monitoring their network suppliers, handling crucial processes off-line and knowing when to spend on technology instead of advertising.

68

Integrated Security Helps Zap Bugs

Du Pont among those using centralized consoles to monitor attempted hacks

BY ANN HARRISON

SECURITY MANAGERS at large companies must often monitor security systems that include a variety of software applications and hardware devices without the ability to conduct real-time surveillance of these far-flung systems from a single location.

Evaluating data from individual intrusion-detection systems

or firewalls can drain staff resources, reduce response time and create unexpected security gaps or blind spots.

Integrated Security Platform

Some companies, such as Du Pont Co., are trying to solve these problems by adopting an integrated security platform to link different products and provide real-time graphical displays on a central console.

The need for a highly scalable common security infrastructure was especially critical at the Wilmington, Del.-based firm, which operates in 65 countries and maintains 135 manufacturing facilities and more than 100,000 clients on its network.

According to Robert Paszko, Du Pont's incident response and vulnerability manager, most security operations are centralized at the company's main data center in Newark, Del., which is managed by Computer Sciences Corp. in El Segundo, Calif.

But to unite existing security systems and expand network surveillance for central and regional data centers, Du Pont chose Open e-Security Platform (OeSP) from e-Security Inc. The suite provided a framework for integrating network hardware and software security products.

OeSP gives security managers real-time views of security events as they are noted by firewalls, intrusion-detection systems and application logs.

Last month, Naples, Fla.-based e-Security announced OeSP's integration with 29 more security products. E-Se-

curity said OeSP allows log information from these products to be collected into a single database and monitored from one console. It also gives customers the ability to monitor the response to security incidents against agreed-upon service levels.

Paszko said OeSP's agent technology and engineering support from e-Security allowed Du Pont to integrate 10 to 20 security sensors per week without having to build its own custom system. He said the company is now using the platform to monitor extranets and will continue to roll out OeSP agents throughout the network.

Last year, Bethesda, Md.-based SANS Insti-

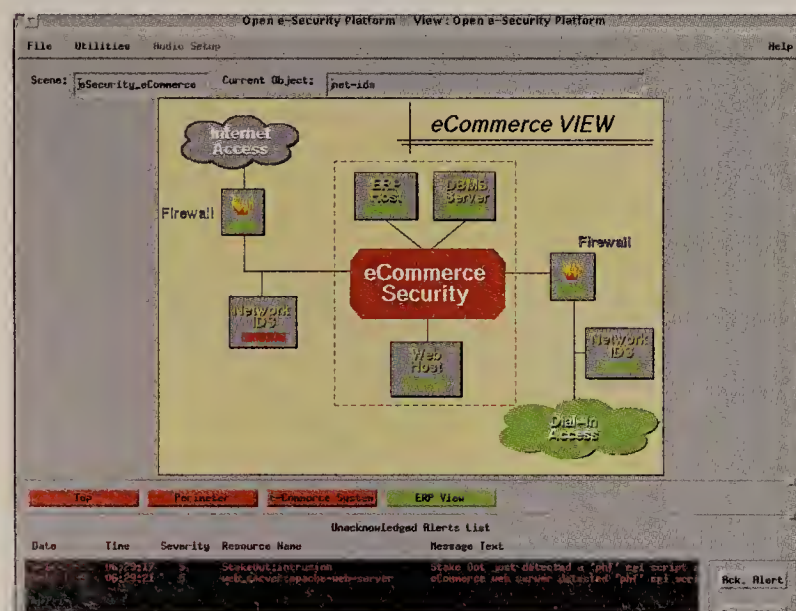
tute announced that e-Security was the only company offering a product that fit SANS' Real-Time Security Awareness designation, which SANS applies to technology that "provides a real-time, holistic view of enterprise security, that allows security managers to monitor, understand and respond to security events," said Daragh Carter, operations director at SANS.

Paszko said the e-Security suite, which was installed in October, "has helped us concentrate our efforts and focus them on high-level alarms, and accordingly, we are able to quicken our response."

OeSP core software is priced at \$32,995; additional components cost extra. ▀



PASZKO: OeSP speeds Du Pont's response time



OPEN E-SECURITY PLATFORM offers views of security events as they are noted by firewalls, intrusion-detection systems and application logs

Toshiba Moves to Focus on Mobile Internet

Electronics giant hopes to save \$1.8B in procurement costs

BY MARTYN WILLIAMS
TOKYO

Toshiba Corp. has announced plans to form i-Value Creation Co., an in-house company that will create digital content, and to establish a division aimed at driving business-to-business e-commerce within Toshiba itself.

In a statement last week, Toshiba said i-Value Creation will initially have two divisions — the Webtop Service Divi-

sion and the Media and Content Division. The former will be charged with development of information and portal services, principally for mobile Internet applications.

The latter will oversee in-house content businesses and promote new services that will take advantage of Internet, digital television and other platforms.

Ready for Mobile

Although several of Japan's electronics giants have announced plans to center their business around the Internet, Toshiba is the first to put such a strong emphasis on mobile

Internet technology. Toshiba is eyeing the upcoming launch of broadband mobile Internet services, scheduled for early 2001 in Japan, as a market it can't miss out on.

Toshiba already has firsthand experience in the sector through its Eki-mae Tanken Club service, which, according to the company, attracts 1 million page views per day to its database of entertainment spots in and around railway stations.

In the near term, before broadband services are available, Toshiba said it plans to offer stock prices and financial market information to mobile

users. The firm is also joining with Nihon Short-Wave Broadcasting Co., a leading broadcaster of financial market information, on an information service.

Procurement and Beyond

Toshiba's e-Net division will develop Internet-based procurement and transaction systems, electronic documentation and management systems and application service provider services.

One of the first customers will be Toshiba itself, which plans to do all of its procurement online by 2001, saving \$1.8 billion over 1999 levels. ▀

Williams writes for the IDG News Service in Tokyo.

BRIEFS

SDK Announced for Face Verification

Malin Systems in Manchester, England, has announced the MalinWitness face verification and identification software development kit (SDK). The kit offers facial analysis via feature verification and recognition, feature location and modeling techniques. By utilizing a 20-byte facial template, the SDK can also make a photo-realistic re-creation of a face.

Off-the-shelf applications for mug shot verification and identification, surveillance modules and a client/server version of MalinWitness are expected to be released later this year. Prices start at \$3,995, and a free 15-day downloadable trial version is available.

CMGI Buys B-to-B Services Company

In an effort to strengthen its business-to-business focus, CMGI Inc., an Andover, Mass., Internet venture fund, plans to purchase Tallan Inc., an e-commerce services firm based in Glastonbury, Conn.

CMGI will employ Tallan's e-commerce development capabilities, which include online transaction processing systems, data mining and data warehousing.

The agreement, which is expected to be finalized in May, is valued at \$920 million.

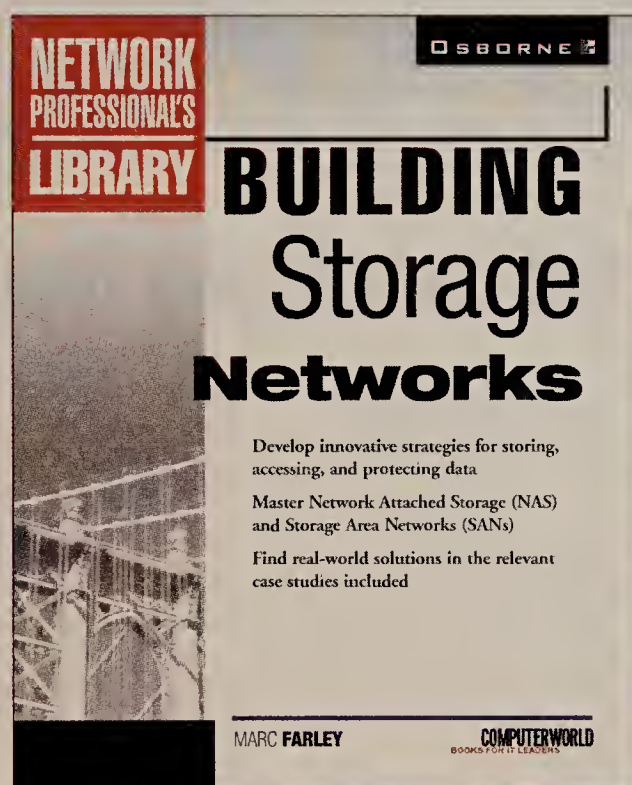
IBM, Symbian Team On Wireless Apps

IBM and Symbian Ltd. in London have announced a joint agreement to create wireless enterprise applications for users of smart phones and other devices based on Symbian technology. Symbian promotes EPOC, a handheld operating system that competes with Microsoft Corp.'s Windows CE and the Palm OS from 3Com Corp.'s Palm Computing in Santa Clara, Calif.

The new applications would allow workers to retrieve Web and corporate data and work with it off-line without the need for a continuous network connection, unlike current Web-enabled phones that require users to stay online to access data or e-mail. No timetable was announced.

Practical Tools for Building Storage Networks

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The latest addition to Computerworld Books for IT Leaders, Building Storage Networks gives readers everything they need to plan and design storage networks from the ground up — or from their existing infrastructure. You will understand the differences between the major storage technologies and become fluent in storage network topics such as network I/O, tracing data paths from application to storage and Internet based storage.

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In-Memory Databases Turbocharge Access

But some worry that without hard disks, they'll lose data if their systems crash

BY ROBIN ROBINSON

IN-MEMORY DATABASES have been around for years, but they're gaining greater attention as large vendors like Microsoft Corp. promise to deliver products to market.

An in-memory database stores information in the memory of a computer, rather than on a disk drive or other fixed storage as conventional databases do. Microsoft failed to deliver a promised in-memory database as a component of Windows 2000 last week, but the technology continues to gain attention because of its speed benefits.

"It's faster than disk, but it's not just the mechanics to pull

the data off the disk," said Merv Adrian, research director at Giga Information Group Inc. in San Jose. "There's also the code-writing for changing a table [and] backing up the index that [is] a substantial area of the database system. So in-memory is a leaner, meaner process."

Real Speed Advantage

Edmond Mesrobian, chief technology officer at Checkout.com Inc. in Beverly Hills, Calif., is using the TimesTen in-memory database from TimesTen Performance Software Inc. in Mountain View, Calif. The entertainment e-commerce site uses Oracle8i to store Web site content, transaction informa-

tion and user profiles.

When a visitor wants to add an item to his shopping cart or browse the site based on previous selections, his information is loaded once from Oracle Corp.'s disk-based database to the TimesTen in-memory database, where it remains for the duration of the visit.

Accessing the information is relatively slow the first time because it's being drawn from the disk, but "when I go back the next *n* times, it's all there, and it's accessed 10 times faster," Mesrobian said.



EDMOND MESROBIAN'S site gains speed with an in-memory database

Not storing data to a disk means crucial information can be lost when a system crashes. However, many databases are

replicated in real time, making it easier to recover information after a crash, said David Morse, president of the U.S. arm of Polyhedra PLC, based in Cranfield, U.K., which makes a hybrid in-memory and object-oriented database.

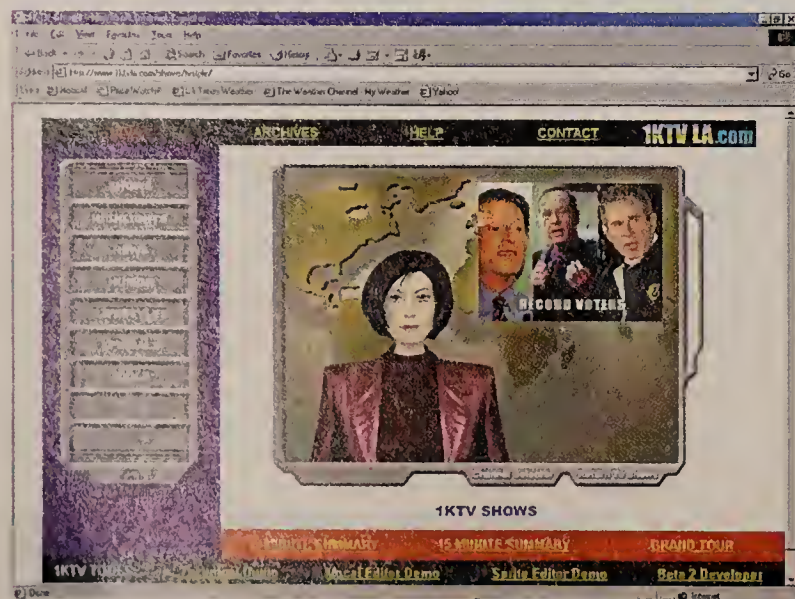
In addition, customers can run in-memory databases on fault-tolerant systems on which downtime is greatly minimized, if not eliminated, Morse said. Polyhedra also has a feature that constantly updates a backup database for nearly instantaneous recovery from a crash, said Morse.

According to TimesTen, between 70% and 80% of the Web-based companies it considers potential customers are using Oracle databases.

In-memory databases are "a front-end turbocharger for Oracle," Adrian said. ▀

TALK ABOUT TALKING HEADS . . .

THIS ISN'T YOUR FATHER'S NEWSCASTER: Los Angeles-based start-up 1KTV is rolling out a Web-based news service that uses animated personalities to deliver the news around-the-clock. The digital anchors began reading the news for the Los Angeles area last week; a rollout of the service is expected in San Francisco in about a month. Access is free after a customer installs the company's free software player from a CD-ROM. General manager Ken Raaf said the service can download about 1 minute of news in a 1KB file because most of the user interface is stored on users' PCs, with only the text and a "director's script" downloaded over the Web connection. Raaf said at least one financial services firm is considering using the technology to develop presentations for its brokers. 1KTV will release the technology in tool form later this year or early next year. Visit www.1ktv.com for more information.



Dot-coms Appear Happy With Oracle8i

Speed-boosting features a draw

BY ROBIN ROBINSON

Customers seeking to build a robust presence on the Web report that they're pleased with several of the speed-boosting features of Oracle Corp.'s 8i database.

Two of the most powerful features for companies conducting e-commerce — the target audience for Oracle8i — are materialized views and summary management, both new in 8i.

All relational databases have "views" that display the combined data from multiple tables within the database. But creating a view every time someone performs a query can dramatically slow a database's response time.

The materialized-views feature in Oracle8i preassembles, stores and updates a view, reducing the processing time. "The difference isn't just a little better — it's a lot better," said Carl Olofson, an analyst at International Data Corp. in Framingham, Mass.

"Moving forward, we are going to take advantage of that," said Larry Chen, chief technology officer at Bidcom Inc. in San Francisco, an application

service provider that serves the construction industry. Processing page displays for requests for information in construction projects can take several seconds because of the multiple table joins (requests for data from different tables) needed to answer a query, he said. Chen was able to trim the query processing time by 2 to 5 sec., using materialized views and other features in Oracle8i.

Just as the new database manages and updates the information in materialized views, it also manages and updates summary tables, which are prebuilt answers to queries that require the same basic information, such as per-store data for a retail operation.

Regularly gathering, storing and updating the data that's commonly needed in queries before those queries arrive also reduces the load on the database and speeds performance.

"Users have created summary tables for years. But when the system is not aware of them, it can't manage them, and that creates more trouble for the user," said Richard Winter, president of database analysis firm Winter Corp. in Waltham, Mass. In 8i, managing and updating summary tables is done automatically.

"The database administrator

AT A GLANCE

Oracle8i

Key features:

- Allows users to create custom thesauri
- Preassembles and updates views
- Automates summary table updating
- Pricing starts at \$6,500

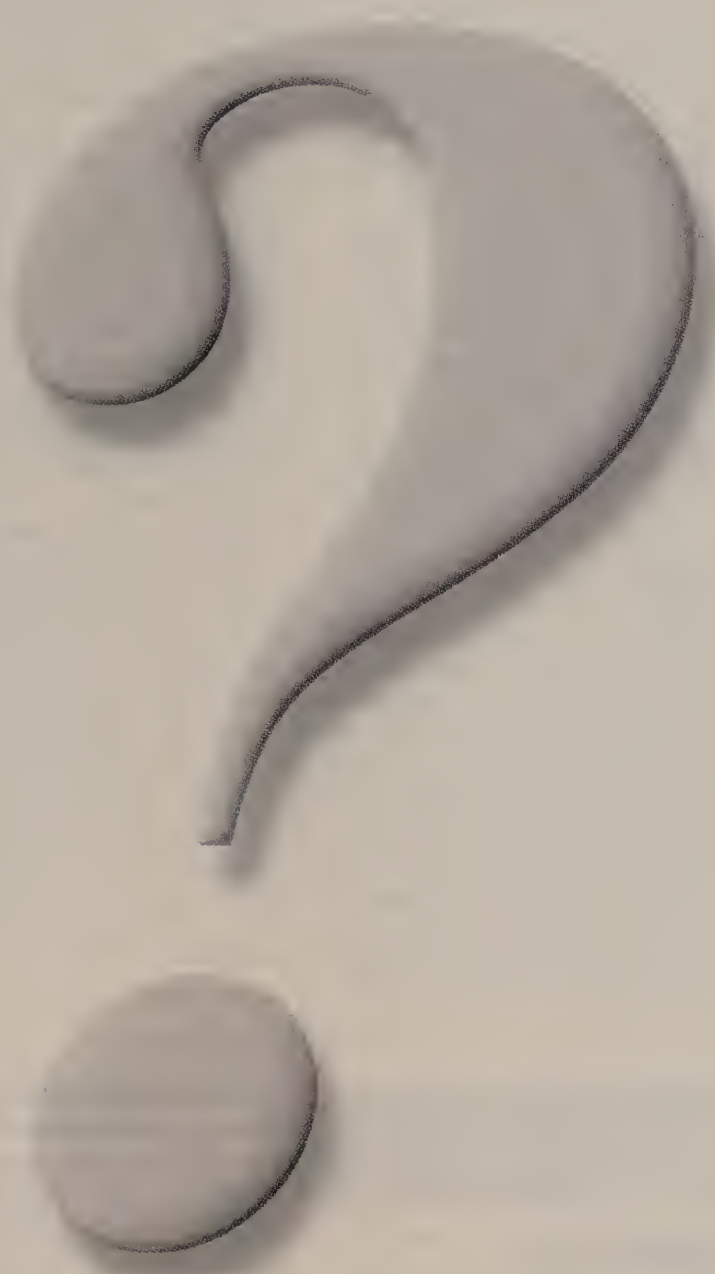
is causing the summary table to be built behind the scene. Users just have the benefit," Winter said.

Murali Menon, vice president of engineering at Burlington, Mass.-based SupplierMarket.com, frequently uses a new feature in Oracle8i called InterMedia Text, which builds thesauri of common terms to help users find information with simple language queries.

For example, Menon created a thesaurus for the site, an online marketplace for manufactured parts, that allows a user looking for bolts to find references to them by asking for either "bolts" or "fasteners."

"It's useful, it requires very little coding, you can reuse it by just changing the query slightly and, ultimately, it improves your time to market," Menon said. ▀

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Sun Plans XML Links to Forte Integration Suite

BY JOHN RIBEIRO
BANGALORE, INDIA

With the help of Indian software companies, Sun Microsystems Inc. will be

offering adapters that link a variety of applications to its Forte Fusion Enterprise Application Integration (EAI) suite.

Sun has signed up Coldstone Softech Ltd. in Hyderabad, India, to design the adapter for customer relationship management applications from Siebel Systems Inc. And Bangalore-based PSI Data Systems Ltd. is developing the adapter for applications for the Society for Worldwide Interbank Financial Telecommunications, the Brussels-based banking cooperative for electronic funds transfer.

"In our case, adapters convert a native application to XML," a data description language, said John Spiers, vice president of international marketing in Sun's Internet Applications and Performance Tools division.

Sun will build some adapters itself, work with third parties to develop others and offer tools for custom development of adapters.

Strategic Move

Forte Software Inc. was acquired by Sun last October and is now a brand within Sun for the EAI product suite, Java development tools, compilers and fourth-generation language software.

According to Spiers, the acquisition of Forte was part of Sun's strategy to fill out its product line. Sun has typically used partners in deploying systems for clients, but increasingly, people don't have time to integrate the infrastructure before they start building applica-

tions, Spiers said. "Our view is that the market will move more toward being infrastructure vendors — vendors of the stack."

The Forte for Java development products are offered in three editions: an entry-level, single-user Community Edition; an Enterprise Edition for distributed applications running across multiple servers; and an Internet edition, scheduled for release later this year.

The Community Edition, formerly NetBeans Developer 3.0, came from Sun's acquisition of NetBeans Ceska Republika AS in the Czech Republic. The Enterprise Edition is the former SynerJ from Forte.

The Internet edition is an enhanced version of the NetBeans product and geared toward small teams of developers targeting a single application server for deployment.

Although there isn't a detailed road map yet, Spiers said, there is a move to converge the Forte for Java development products into common code for the NetBeans and Forte products to achieve a common experience and upgradability for developers.

The three editions of Forte for Java may also be collapsed and instead there may be about 50 different functional components from which users can choose. ■

Ribeiro writes for the IDG News Service in New Delhi.

Just a reminder
the next time you're thinking of
a new line-of-business solution.

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world record
demonstrates
that Microsoft®
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of headroom
for CompUSA."**

— Honorio Padron,
Executive Vice President
CompUSA

Microsoft

Where do you want to go today?
www.microsoft.com/sql/worldrecord

BRIEFS

NetDelivery Rolls Out New Platforms

NetDelivery Corp. in Boulder, Colo., recently rolled out two new Web-based software platforms, NetDelivery Consolidex and NetDelivery Ceradex, for the safe and secure delivery of electronic documents.

Available immediately, Consolidex is an end-to-end package for sending, tracking and monitoring electronic bills and financial documents, the company said. Due next month, Ceradex will manage the delivery of sensitive or high-value documents through an application service provider model.

Hitachi Enhances Freedom Storage System

Hitachi Data Systems Corp. in Santa Clara, Calif., has announced new features for its Freedom Storage 7700E storage subsystem. Enhancements include 47GB disk drives, additional software and support for Red Hat Inc.'s Linux 6.x, Microsoft Corp.'s Windows 2000 and Novell Inc.'s NetWare 5.0 operating

systems. Available software includes Path Manager, which automatically detects a failed path between a server and the 7700E; Dynamic Optimizer, which automatically monitors 7700E subsystem activity; and Flash-Access, which enables critical data to be put into a high-speed cache within the subsystem.

Plasmon Ships Storage Offerings

Plasmon PLC has begun shipping the 8000 Series of its 12-in. optical TrueWorm technology drives, media and libraries. Features include 30GB of online storage per disk and a SCSI-II interface. Pricing begins at \$30,000 for the drives and \$126,000 to \$263,000 for the libraries, depending on the configuration. Based in Minneapolis, Plasmon is a provider of jukeboxes, drives and disks.

Sun Announces JavaAccess Controls

Sun Microsystems Inc. has released the Java Authentication and Authorization Service (JAAS), available at <http://java.sun.com/products/jaas>. JAAS enforces access controls based on the identity of the user running the code, rather than merely on where the code

StorageNetworks Unveils Portal for Storage Services

BY CLARE HANEY
SAN FRANCISCO

StorageNetworks Inc. has announced what it calls a secure Web portal to help customers monitor and manage storage resources.

Known as Virtual Storage Portal (VSP), the Web-based software gives customers access to storage resources at the company's storage points of presence (S-POP) data centers, said Bill Miller, co-founder, executive vice president and chief technology officer at Waltham, Mass.-based StorageNetworks.

The portal offers a single graphical user interface that can be used to view data on the availability, utilization and performance of StorageNetworks' storage services, the company said. It includes an audit log that tracks all log-in/log-out activity and provides the ability to grant different access levels to users or administrators.

"We have no plans to sell the software [commercially] to anyone," Miller said. "You subscribe to StorageNetworks, you get the software."

Within three years, StorageNetworks intends to advance the software to the point where users can deploy policy-based management, which will allow them to set policies so that storage can be automatically deployed as needed, Miller said.

TechTarget.com Inc. has beta-tested

VSP. The Dedham, Mass.-based Internet start-up is establishing a portfolio of information technology-specific portals and expects to triple its current 1 terabyte (TB) of stored data to about 3TB by the end of this year, said Greg Strakosch, the firm's CEO.

"VSP has a very clean and simple interface," Strakosch said. "One of the worries IT guys have when you outsource your storage is whether you're giving up control. VSP allows them to have that control."

StorageNetworks currently has more than 100 customers, three quarters of which are emerging Internet start-up operations such as community-building site eCircles.com Inc. and Internet photo company Ofoto Inc., Miller said.

"They don't have the staff and the infrastructure; it's a natural fit," he said.

StorageNetworks already has 11 S-POPs in the U.S. and has opened its first international S-POP in London, with more to follow in Frankfurt and Amsterdam. Four more will be established in Asia in the second quarter of this year, Miller said.

StorageNetworks' ultimate aim is to build a worldwide dedicated storage network that will link the S-POPs via fiber-optic cable to customer locations.

The firm has also announced its StoragePort Access Channel, which is aimed at allowing StorageNetworks partners

that are hosting service providers, application service providers or Internet service providers to offer their customers plug-in access to almost unlimited

storage capacity. The goal is to make connecting to storage resources as simple as hooking up electricity or phone service, Miller said. ▀

Haney writes for the IDG News Service in San Francisco.

Just a reminder
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came from and who signed it.

In a separate announcement, Sun and InterWorld Corp. have announced an agreement to offer Retail Essentials, an enterprise commerce package of software, hardware, networking and consulting services aimed at helping retailers get online quickly and maximizing the profitability of their storefronts. Through its relationship with InterWorld, Cisco Systems Inc. will provide the e-commerce networking infrastructure.

New Java-Based Call Center Software Available

Softbase Systems Inc. in Asheville, N.C., has released NetLert 2.0 for call center operators. The release includes highly configurable instant messaging, as well as chat and bulletin-board services for call centers that forbid e-mail but want communications inside a firewall. The Java-based product is available now and is priced between \$995 and \$7,500, depending on the number of servers and clients.

Macintosh Storage Options

VST Technologies Inc. has unveiled a range of hard drive and removable media storage systems based on FireWire and Universal Serial Bus (USB) for Apple Computer Inc.'s Macin-

tosh computers. The new FireWire hard drives feature both FireWire and USB ports, meaning they can be used for transporting large amounts of data between newer FireWire-equipped Apple systems and older models that support only USB. Available with capacities from 6G to 25G bytes, the new drives will ship in April, said Vincent Fedele, founder and chairman of VST Technologies.

Wireless, Linux, Win 2k Expected to Shine at CeBit

Wireless Internet, e-commerce, stripped-down PCs, Linux and Windows 2000 are some of the themes expected to take center stage at this year's CeBit exhibition, Feb. 24-March 1 in Hanover, Germany. With some 7,500 exhibitors spread over 26 halls, the show can lay claim to the title of the world's largest IT event.

The fledgling market for Wireless Application Protocol (WAP) phones and related applications - which allow users to access Internet-based information via their mobile phones - will be a major focus of the wireless arena at CeBit.

Attendees will get a look at the latest WAP handsets from the likes of L. M. Ericsson Telephone Co., Motorola Inc., Nokia Corp. and Siemens AG, and vendors will offer demonstrations of WAP-based applications.

TRIM ALONG PERIMETER TO COLLECT AND ALERT OTHERS TO THE WHOLESOME GOODNESS OF SAVING MORE THAN HALF THE COST OF THE SUN SOLARIS SOLUTION.

Number, Please: Dates, Times, Area Codes and FM Stereo, Too

BY RUSSELL KAY One of the original goals of this column was to call attention to little-known but really useful utilities — the kind that make you wonder how you ever got along without them. This week, I offer two programs that make a difference in my work and may be helpful to readers. And just to round out the picture, there's a new piece of hardware that means well but in the end doesn't prove very useful.

Got Time for a Date?

I've just come across an almost-perfect example of a great utility. It's called TClockEx, and I've been looking for a program like this ever since Windows 95 came out.

It's a small program (under 500KB) that improves Windows' time display — the little digital clock at the right end of the system tray, down in the Task Bar. TClockEx allows your PC to display date information constantly and lets you choose the information you want to see and configure the formats, colors and fonts of the display. A nice touch: Click once on the time/date area and you get a handy one-month calendar display that pops up instantly.

The program offers a few more wrinkles — monitoring CPU and memory usage, for example — but those are really

incidental to the date/time function. Now I can check today's date just by looking at the screen corner, without having to bring up my calendar or hover the cursor over Windows' standard time display and wait.

TClockEx is free-ware that's available for download at <http://users.iafrica.com/d/da/dalen/tclockex.htm>. (My thanks to Dale Nurden, who created this little gem, and to Brian Jackson at InterSite.com, who called it to my attention.)

The Area Code Conundrum

Ten years ago, you could always recognize a telephone area code for what it was thanks to the telltale 0 or 1 in the middle. Then phone company deregulation accompanied by an explosion in demand for new phone numbers forced the splitting up of many

area codes and the creation of new ones that didn't fit the old pattern.

Couple this with the computerized address books, contact managers and palm-size organizers into which we've been feeding thousands of phone numbers, and there's a real problem.

Too many times, I've made a phone call only to find out that the number doesn't work because the area code has changed. And, of course, I've made these calls well past the transitional periods when the phone company will connect you anyway.

Corex Technologies Corp., maker of the CardScan dedicated business-card scanners and software, knew that this problem struck at the heart of its core product's functionality. The Cambridge, Mass.-based company figured out a way around the problem: Area Code Fix software. It's very simple to use. Just install it and tell it to examine files in your address books and personal information managers. It identifies area codes it knows have changed and flags others that may be questionable.

Although this sounds simple enough, it's actually a complex task to factor in the city and street address as well as the

area code and phone number. Further complicating the issue is that sometimes a new area code isn't based on geographical location but instead applies only to new subscribers and new phone lines after a given point in time. This is called an area code overlay, and there's no automatic way to determine the correct area code. Corex's product flags those numbers for a manual check.

Because the number of area code splits and overlays is growing, Corex sensibly offers a subscription service to update your computer's onboard database. And if you don't update for several months, the software still brings you completely up-to-date the next time you log on for changes.

This is a neat solution to a common — and annoying — problem. For \$49.99 (plus a \$19.95 update subscription fee after the first year), you can determine whether you're really calling the party you intended. Available at www.areacodefix.com, Area Code Fix is currently a stand-alone, single-user product, but a corporate version is under development.

What Kind of Tool Am I?

On the face of it, Irvine, Calif.-based D-Link Systems Inc.'s new

DSB-R100 Universal Serial Bus (USB) radio is a nifty gadget. It looks like a hockey puck that escaped from Apple Computer Inc.'s design department and then grew an antenna and two wires.

The \$29.95 device is a full-fledged FM stereo receiver that plugs into your computer's USB port and sound-in or microphone jack. Tuning and volume control are done through software, and you can preprogram up to 200 stations.

Besides receiving broadcasts, the DSB-R100 lets you record them on your computer using the MP3 format. You can also hook the radio directly to outside speakers.

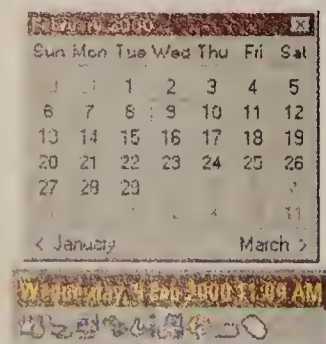
Unfortunately, although it seemed to work OK as a radio, it caused problems whenever I used Internet Explorer 5 or Lotus Notes. After 10 or 15 minutes, the online program would hang; the condition could be remedied only by rebooting — or by unplugging the radio.

Finally, if you're using Internet Explorer 5.x, your computer already has a radio that can access hundreds of radio stations, both broadcast and Internet-only.

All in all, D-Link's USB radio is an interesting concept, especially in this age of media convergence. But in the final analysis, it seems like the answer to a question that no one is asking. ▀

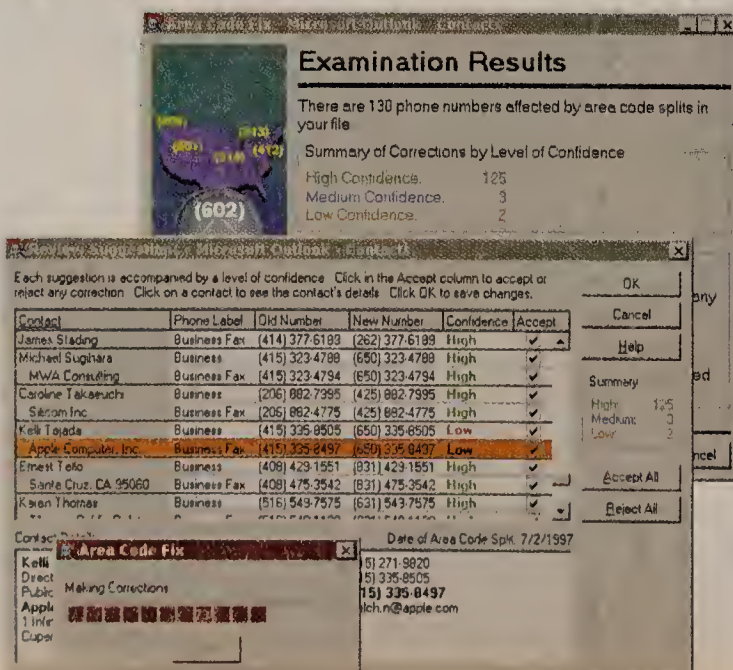
Do you have any favorite, unsung-hero utilities or products that you wouldn't want to live without? Let me know about them at russell_kay@computerworld.com.

REVIEWS



TCLOCKEX

Download at:
<http://users.iafrica.com/d/da/dalen/tclockex.htm>
Price: Free

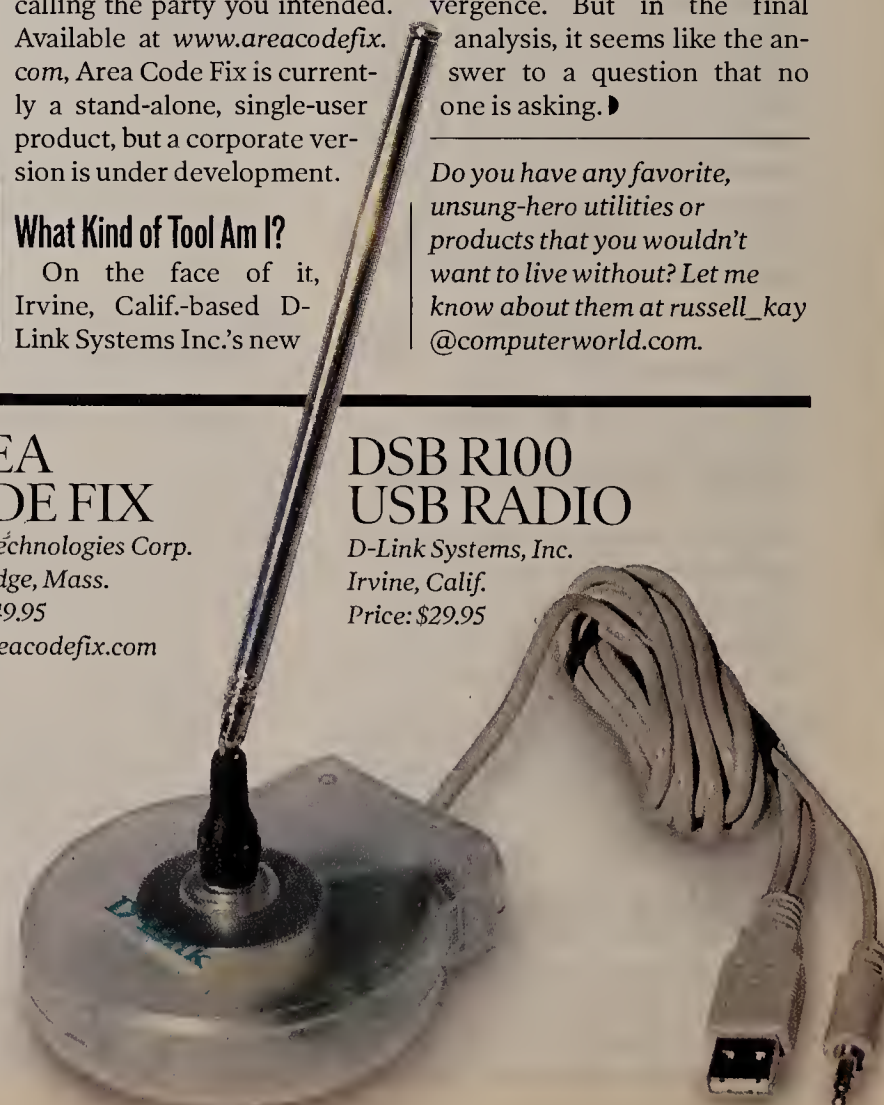


AREA CODE FIX

Corex Technologies Corp.
Cambridge, Mass.
Price: \$49.95
www.areacodefix.com

DSB R100 USB RADIO

D-Link Systems, Inc.
Irvine, Calif.
Price: \$29.95



3G Wireless

BY MATT HAMBLIN

CURRENT wireless communications are just too slow, some experts say. As the number of wireless handheld devices designed to access the Internet increases, there's a serious need for a faster and better wireless communications technology. This technology, which isn't likely to hit the U.S. for several years, will provide superior wireless voice quality and data services supporting video and multimedia content sent wirelessly to laptops, handhelds and smart phones.

Industry players are talking about the next wave of wireless technology, and they're calling it 3G, for third generation. But it may not be simple for them to agree on a technology. Listening to industry analysts describe 3G is a lot like tuning in to *Washington Week in Review* and listening to the panelists try to outyell one another.

International Demand

3G is political, partly because multibillion-dollar markets are always political, but also because the push to faster bandwidth is being driven heavily by demand for better cellular services in Japan and Europe — but less so in the U.S.

Wireless data applications, such as wireless banking, are already seriously catching on in Japan and Europe, so expanding those capabilities abroad makes sense, analysts say. In Japan, the available wireless spectrum is being used up and another technological standard is needed.

Japan is likely to get the first 3G wireless bandwidth boost (up to 2M bit/sec.) in April of next year, followed by Europe in 2002 and the U.S. sometime between 2003 and 2005, analysts say.

"The U.S. is way behind in wireless, and even people in the wireless industry don't understand how far behind U.S. wireless data applications are compared to those abroad," says Alan Reiter, an analyst at Wireless Internet and Mobile Com-

DEFINITION

3G stands for the third generation of wireless communication technology. It refers to pending improvements in wireless data and voice communications through any of a variety of proposed standards. The immediate goal is to raise transmission speeds from 9.5K to 2M bit/sec.

The Alphabet Soup of Carrier Standards

	TECHNOLOGY	FEATURES
First-generation wireless	AMPS Advanced Mobile Phone Service	<ul style="list-style-type: none"> • Analog voice service • No data service
Second-generation wireless	CDMA Code Division Multiple Access	<ul style="list-style-type: none"> • Digital voice service • 9.6K to 14.4K bit/sec.
	TDMA Time Division Multiple Access	<ul style="list-style-type: none"> • CDMA, TDMA and PDC offer one-way data transmissions only
	GSM Global System for Mobile Communications	<ul style="list-style-type: none"> • Enhanced calling features like caller ID
	PDC Personal digital cellular	<ul style="list-style-type: none"> • No always-on data connection
Third-generation wireless	W-CDMA Wide-band Code Division Multiple Access	<ul style="list-style-type: none"> • Superior voice quality • Up to 2M bit/sec. always-on data
	CDMA-2000 Based on the Interim Standard-95 CDMA standard	<ul style="list-style-type: none"> • Broadband data services like video and multimedia • Enhanced roaming

Competition or Confusion?

There are three predominant wireless standards in the U.S.: Code Division Multiple Access (CDMA), Time Division Multiple Access (TDMA) and Global System for Mobile Communications (GSM). There are also at least two 3G standards in the works: W-CDMA and CDMA2000 (see chart).

Europe relies entirely on GSM, which some analysts say is superior to the U.S. approach because of the uniformity of the network. The push for 3G in Japan is especially pronounced. Analysts say that's because Japan has so many nonstandard propri-

etary systems and radio spectrum is being used up.

Service in the U.S. is fragmented because the Federal Communications Commission originally sold separate digital wireless licenses in dozens of markets, mainly to generate income for the government, says Alan Reiter, an analyst at Wireless Internet and Mobile Computing in Chevy Chase, Md.

"The FCC did the American public a disservice by issuing licenses in each market, so we have three standards and don't have coverage or penetration," he says. "The FCC certainly could have issued half a dozen licenses for nationwide service, but didn't."

But some analysts say the FCC's actions were aimed at promoting competition. — *Matt Hamblin*

puting in Chevy Chase, Md.

"Phooey," say analysts such as Mark Zohar at Forrester Research Inc. in Cambridge, Mass. Carriers and equipment vendors like LM Ericsson Telephone Co., Nokia Corp., Lucent Technologies Inc. in Murray Hill, N.J., and Motorola Corp. in Schaumburg, Ill., are "bullish" on 3G, says Zohar.

Yet the "business models and applications remain unclear," Zohar adds. "Carriers believe that 3G is the technology that will launch them into new lucrative markets ... but they don't know which applications to focus on."

However, even at today's slow speeds, there are many compelling wireless business

applications, says Reiter, pointing to successes in vertical industries such as trucking, inventory control and public safety. He also says he sees more general wireless uses for business in the future. "In 3G, you could download brochures and see photos of products or do real-time demonstrations of products from a laptop," Reiter says.

"The importance of 3G to the enterprise is clear," says analyst Craig Mathias at The Farpoint Group in Ashland, Mass. "3G means anything that land lines can do, wireless can do."

With such a lofty potential, Mathias and Reiter say companies should begin planning how 3G wireless will impact their worlds. U.S. banks are already testing systems that allow customers to use wireless phones and handheld devices for personal transactions. Customers of Bank of America Corp. in Charlotte, N.C., can check their balances on Palm VII devices, and Citibank in New York allows customers to handle transactions using nearly any device in four countries, Mathias says.

And online brokerages are enabling wireless trading.

Overkill?

But Zohar throws a wet blanket on some 3G applications. For example, he calls wireless videoconferencing "overkill." He also says U.S. carriers won't invest billions of dollars in 3G infrastructure to address a niche market for high-speed laptop wireless access, especially since so many wireline and wireless LAN options are available.

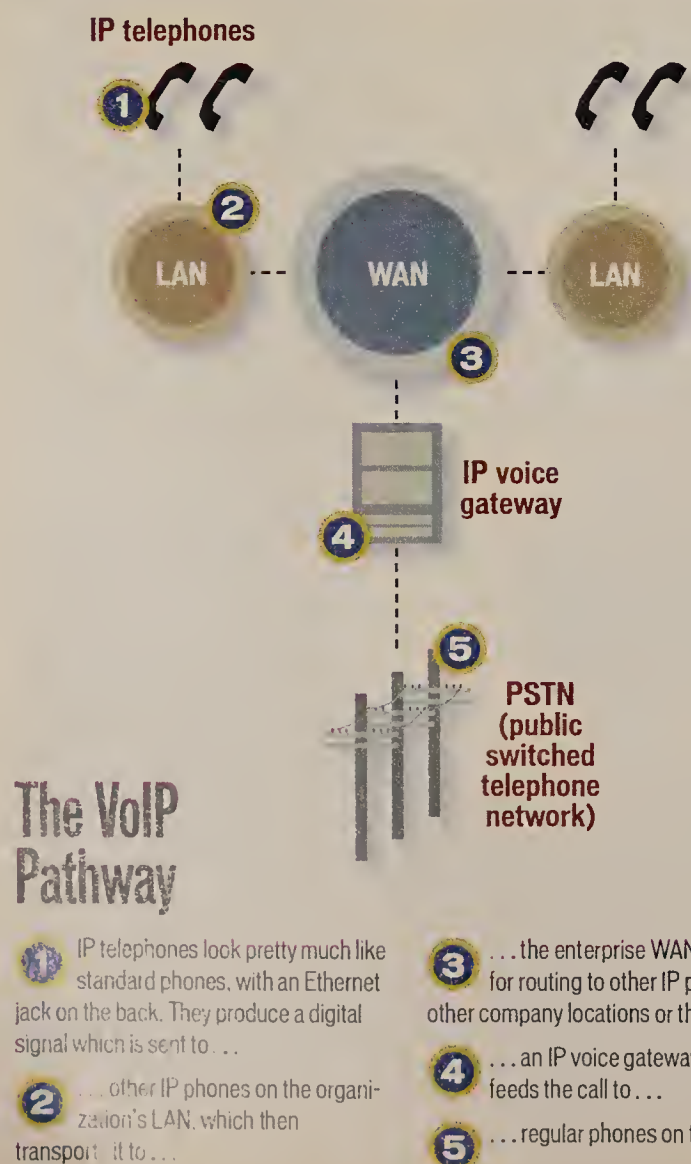
Some providers hint that 3G technology may make possible a "world phone" — a system that would allow travelers to have voice and data access from a single device anywhere.

But the Federal Communications Commission hasn't even allocated radio spectrum to handle 3G in the U.S., and Mathias says it's "very unlikely" that there will be global commonality.

Still, some analysts say U.S. businesses will want to pay attention to 3G just because the wireless applications already in use make good business sense even at snail-like speeds. "Right now you can access virtually any text-based information in a corporate server from a wireless device and it isn't rocket science to set it up," says Reiter. "And the return on investment for such a project is less than a year." ■

Vendors Tout Voice Over IP

Are voice and data converging, or is it just more talk? By James Cope



Visit Catalyst Capital Inc., a venture capital and merchant banking company in Newport Beach, Calif., and you won't find any phone lines or private branch exchange (PBX) systems. Nor will you encounter a traditional phone system if you stop by Home Shopping Network Inc.'s (HSN) newest warehouse in Salem, Va.

Both companies elected to forego standard phone systems and instead treat voice like any other electronic data. Rod White, vice president of telecommunications at HSN in St. Petersburg, Fla., says this approach saved his company \$26,000, compared with the cost of installing a PBX phone system with equivalent features.

To be sure, there are devices that look like telephones. What's different is how they're connected.

At Catalyst, a piece of Category 5 Ethernet cable that's just long enough to reach the Ethernet jack on the back of the desktop computer marries the PC to the phone device, explains Mark Winkler, chief technology officer at Catalyst.

Then another length of Category 5 cable snaps into an RJ45 network jack on the phone — just like the network interface card jack on the back of a PC — and hooks into the LAN, Winkler says.

HSN has a slightly different setup at its Salem warehouse. There, separate cables run from each phone and PC, White says. Then both sets of cables connect to an Ethernet switch on the LAN.

IP Phones

Catalyst and HSN have installed Internet protocol (IP) telephone systems. The one at Catalyst is from San Jose-based Cisco Systems Inc. HSN uses Santa Clara, Calif.-based 3Com Corp.'s voice over IP (VoIP) system.

Unlike traditional circuit-switched methods where phone conversations are sent through a connection that's been specifically established (switched on) for the purpose, an IP phone system converts analog voice signals into IP packets — hence the term VoIP. The packets themselves carry the voice and routing information and find their way through the network in much the same way other data travels over the Internet.

And because IP phones are IP-addressable devices that connect directly to the network, they can be moved from one physical location to another on the network.

In the case of the IP phone, the extension number moves with the phone. That network can be the LAN in an office or a WAN that connects offices. The type of network usually doesn't matter, because IP can find its way through a variety of network plumbing, including Asynchronous Transfer Mode and frame-relay technologies.

PBX Power

However, as universal as IP has become for data networks, the VoIP installations at Catalyst and HSN seem to be exceptions. Analysts say it will be 2005 or so before VoIP replaces standard phones in the large enterprise.

Elizabeth Asher, an analyst at Meta Group Inc. in Stamford, Conn., says she doesn't envision big companies anytime soon replacing their perfectly good PBXs — those pro-

prietary phone systems that handle call routing and voice mail inside most companies — with IP voice systems.

"I do see [VoIP] happening in branch offices and some small implementations in a lab," Asher says. "But even then, there has to be an impending event to drive the change."

There's also the problem of scalability in VoIP implementation, says Lisa Pierce, an analyst at Giga Information Group Inc. in Cambridge, Mass. VoIP call-routing capabilities max out at about 600 users, which limits the number of phones that can be used.

Networking companies say they'll soon remedy this limitation, but in the meantime, there have been no VoIP sightings of more than a couple of hundred users, analysts say.

Why Voice Over IP?

Even the promise of cost savings from a single system for both voice and data doesn't cut it with Pierce.

"You need some reasons to go to a new network for voice besides saving money," according to Pierce. "Everyone talks about unified messaging and collaborative work [where all communication goes over data lines]. Today, these are not the drivers for business customer adoption of VoIP. Everyone's got a budget. Companies have multiyear contracts with existing carriers [for voice service]."

But Cisco, 3Com and others are working hard to take voice over data lines into the large enterprise mainstream. Early problems of voice echo and delay have largely been overcome, the vendors say. And both Cisco and 3Com claim to be realistic about wide-scale deployment of VoIP. That's why they provide IP gateways that hook up with a company's existing PBX system, permitting use of the existing phone system while providing a migration path to VoIP.

In a native VoIP system, there are also IP gateways that bridge to the public switched telephone network.

For those who are ready to give VoIP a try, one analyst asks a question that gives pause: "How are you going to call the help desk to report a network outage?"

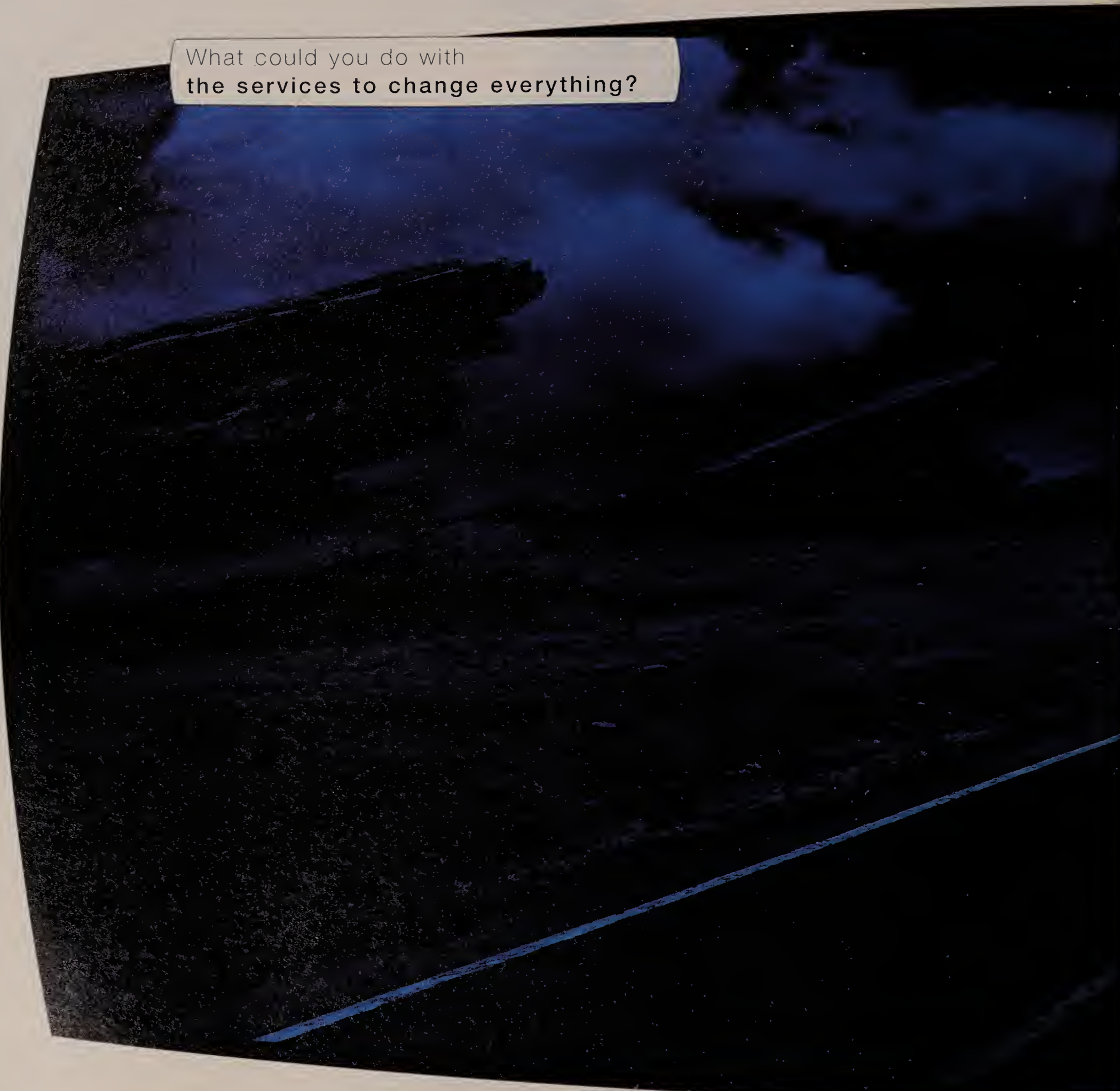


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SHAWN DAVISON says database connection-pooling software was instrumental in KBkids.com's scalability



PATRICIA BARRY LEVY

Made It!

Three online retailers tell how they survived the holidays: By choosing tools that scale, monitoring their network suppliers, handling crucial processes off-line and arguing for infrastructure upgrades — not advertising. By Mathew Schwartz

IN DECEMBER, *Computerworld* interviewed three companies about how they scaled their sites to — hopefully — survive the onslaught of online holiday shoppers [“Surviving E-Christmas,” Technology, Dec. 20]. Well, the news is in: They and their Web sites survived, with minimal or no damage.

Luck was only part of it. Each company worked furiously before the holiday season began in October to upgrade its infrastructures and ensure that it could deliver products to customers. The companies learned four lessons: Choose tools that will scale with the site, argue for spending on infrastructure upgrades rather than advertising, always monitor network suppliers and handle key processes off-line.

There's already more work to be done before next Christmas. Consumers spent \$7 billion online this past season, according to Jupiter Communications Inc. in New York. And though 90% were happy with the experience, consumers still said the process could go better. Their complaints were the same as in 1998: inventory shortfalls, high shipping and handling costs and slow site performance.

At the same time, sites must insulate themselves against denial-of-service attacks, such as those that hit Yahoo Inc., Amazon.com Inc., CNN.com, Buy.com Inc. and eBay Inc. earlier this month. Here's what these pioneers learned this holiday season, and how they're using it to meet the challenges of next year.

LESSON 1: Choose Tools That Scale

Conventional wisdom says you shouldn't make major changes to your e-commerce Web site during the holiday shopping season because changes increase the likelihood that something could go wrong. But for KBkids.com Inc. in Denver, which was established only last July and subsequently saw huge traffic increases, upgrades were a necessity.

So amend that wisdom: You can make major changes if you choose your tools carefully.

As a first priority, your site must be able to handle sudden traffic surges. KBkids.com reviewed all its systems for scalability and found that its databases were vulnerable. “A key technology that was instrumental in our scalability was database connection-pooling software that allows us to handle many user connections for every database connection we have,” says Shawn Davison, vice president of technology at KBkids.com. Most database implementations — such as the Apache servers KBkids.com uses — require a dedicated connection between each server and database. With high levels of traffic, these one-to-one connec-



tions can become bottlenecks. So the toy vendor developed its own Java Database Connectivity pooling software, though such software is also available off-the-shelf. By pooling connections, the site can handle more traffic without slowing.

Site-monitoring tools must be carefully chosen as well because they can buckle under too much traffic and leave a company unable to gauge its site performance. KBkids.com tried various analysis packages, but none could process the site logs in less than 24 hours, and none could effectively monitor the site in real time. Had the company simply integrated these tools without testing them first, the results could have been disastrous.

One product, WebTrends from Portland, Ore.-based WebTrends Corp., "had to load all of the log files into memory, and it would get to a point where it would crash," says Davison. Though he says new WebTrends software remedies such problems, KBkids.com has since built a hybrid system with homespun analysis tools and an Oracle Corp. data warehouse.

By and large, KBkids.com's seat-of-the-pants infrastructure upgrades were successful. A server's inability to process two simultaneous coupon offers crashed the site for a few hours. But overall, PC Data Processing Inc., a Web traffic measurement firm in Port Washington, N.Y., ranked it the No. 3 online toy retailer in the past Christmas season, with more than 2.6 million unique visitors in December.

LESSON 2: Argue for Infrastructure, Not Ads

With investors demanding that online retailers produce profit growth, the nuts and bolts of sale processing and order fulfillment become as important, if not more so, than expensive, image-building advertising campaigns.

The drive for profitability helped Randy Jo Wilcox, president and chief operating officer of BuyItNow.com LLC in Tulsa, Okla., make the following choice: After October sales numbers looked especially good, she slashed the \$12 million holiday advertising budget to \$2 million. Then she invested in tools to make the site run faster. They included Taxis, a search engine from Thunderstone Software-EPI Inc. in Lakewood, Ohio.

Unlike BuyItNow.com's previous search technology, Taxis could return results for words that users misspelled. Also, users could drill deeper into specific categories by further refining searches, which is useful given the site's 13 online stores and breadth of products. Users are now finding what they want more quickly.

That meant less load on BuyItNow.com's servers, according to net.-Analysis site-monitoring tools from

Cambridge, Mass.-based net.Genesis Corp. "According to net.Analysis reports, 33% of people were on our site for 10 to 30 minutes, and that's a lot," says Wilcox. In addition, 12% of people were on the site for more than 30 minutes. E-commerce sites are like restaurants: Business is good, but turnover is even better.

Despite slashing advertising, BuyItNow.com met its 1999 holiday earnings projections.

LESSON 3: Monitor Your Network Suppliers

In an ideal world, phone companies, Internet service providers and network backbone providers would contact online retailers whenever their service went down. What really happens is that it's up to the retailers, with their livelihood at stake, to raise the red flag. BuyItNow.com vigilantly watches its networks with the help of a tool called VisualRoute from Datametrics Systems Corp. in Florham Park, N.J. VisualRoute lets BuyItNow.com monitor its servers, some of which are hosted by Exodus Communications Inc. in Santa Clara, Calif., to track which servers are serving which geographical areas, and to keep an eye on its network host providers. The Christmas season demanded special vigilance: Although most network providers had occasional outages, all three companies interviewed for this article saw definite congestion on the Internet as a whole this past season.

So when Los Angeles visitors to the BuyItNow.com site were getting served by a server in Washington this past Christmas — even though BuyItNow.com has a server bank in California hosted by Exodus — the company

knew there was trouble. It turned out to be a problem with network provider Cable & Wireless USA in Vienna, Va. "We saw a lot of trouble with Cable & Wireless," says Wilcox. Furthermore, Cable & Wireless was unaware that there was a problem with the connection it provided to BuyItNow.com.

"The [Cable & Wireless] primary pipe went down, and their secondary has the capability of an ISDN. The pipe they had us on was trying to take the water coming out of a firehouse and force it down a straw," says Wilcox. Integrated Services Digital Network (ISDN) lines can transfer about 128K bit/sec. After a few more hours, Cable & Wireless increased the primary pipe to a burstable OC3, the largest available network connection, which can handle 155M bit/sec. A Cable & Wireless spokesman said he couldn't discuss this specific case but added that the company's overall performance during the 1999 shopping season was excellent, as evidenced by Internet service ratings from Austin, Texas-based Matrix Information and Directory Services Inc.

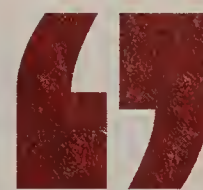
BuyItNow.com also suffered a six-hour outage due to failed routers at an Exodus site in San Jose. "We lost a router in San Jose, and it was like a spiraling effect — traffic was rerouted, it took our MCI network in Dallas [and] Chicago out," says Wilcox.

Then there was the incident with BuyItNow.com's service provider, Oklahoma City-based ioNet Inc., a division of Herndon, Va.-based PSINet Inc., as documented in "Surviving E-Christmas." IoNet, which connected BuyItNow.com's 200-person home office in Tulsa to the Internet, experienced several outages during the busy shopping season, which made updating the site and processing order fulfillment difficult at times. E-commerce functions are handled in different sites.

A spokesman for PSINet couldn't comment on those incidents.

After BuyItNow.com switched to AT&T Corp., with MCI WorldCom Inc. as a backup, reliability has gone up and average Web page load times for BuyItNow.com's employees are down from more than a minute to just three seconds.

By contrast, Rich Secor, vice president and CIO at SmarterKids.com Inc., an online educational toy retailer in Needham, Mass., says his site had absolutely no interruption of service. But only some of that was due to careful planning. "Certainly there's an element of luck in that I can't control the Internet all the way to the customer's browser. However, we did do everything we could to build redundancies into the system," he says. For example, it measured the network from many locations and checked application performance every 15 minutes. The redun-



We lost a router in San Jose, and it was like a spiraling effect.

RANDY JO WILCOX,
PRESIDENT AND CHIEF OPERATING OFFICER,
BUYITNOW.COM

dancies paid off: The site handled 2.1 million unique users in December. PC Data ranked it the top educational site on the Web and the No. 4 online toy retailer this past Christmas.

LESSON 4: Handle Key Processes Off-line

During the 1998 holiday shopping season, SmarterKids.com ran into problems when CyberCash Inc., the Reston, Va.-based third-party authentication bureau it uses to check consumers' credit cards, went off-line. When things were functioning normally, consumers would enter their orders and personal information, then wait while the SmarterKids.com site verified the credit card. But with that third-party service unavailable, the verification screen timed out, and users saw a screen with only an error message. The reason: SmarterKids.com's Web site didn't know how to recover from that type of error. While SmarterKids.com claims that it was able to directly contact customers whose checkout process had suddenly aborted, subsequent outages underscored the need to avoid such incidents.

For the 1999 holiday season, SmarterKids.com succeeded in making the credit-card authorization process asynchronous, meaning it functions independently of the rest of the transaction process. Instead of making customers wait for their credit cards to be verified in real time, they would get an e-mail once the verification had taken place, confirming the order. "If the credit authorization has to wait two hours from the time you placed your order, it's not a big deal — it's not going to affect when the order ships," says Secor.

It worked. "There were brief periods of time when our credit authorization bureau wasn't available, but customers never knew," reports Secor. By simply decoupling the authorization process, SmarterKids.com gave itself room to breathe. ■



There were brief periods of time when our credit authorization bureau wasn't available, but customers never knew.

RICH SECOR,
VICE PRESIDENT AND CIO,
SMARTERKIDS.COM

E-Mail on Steroids

BoldFish's system offers high-volume messaging with low-volume impact

BY CYNTHIA MORGAN

EVERY GOOD salesman's motto is "Stay in touch with your customer," but that can be a tough proposition when the Internet lies between you and your customer. That's one reason why mass e-mailings — of newsletters, alerts and order confirmations — are booming.

Unfortunately, today's outbound e-mail servers were never meant to handle such loads. That's where BoldFish Inc., a 3-year-old start-up in Santa Clara, Calif., comes in. The BoldFish product bypasses conventional mail-merge techniques, say its inventors, to both speed up bulk message delivery and reduce the burden on network resources.

For Chief Technology Officer Tim Yamauchi, the increased speed meant the difference between launching a vital new customer service for his company, San Francisco-based Stockpoint Inc., or possibly watching the competition get there first. "BoldFish made the difference between a wish list and something we could sell into our client base," he says.

Stockpoint provides Web-based financial applications "for anyone who wants a financial presence on the Web," Yamauchi says. The company's 200-plus clients include brokerages and bankers such as Quick & Reilly, Barclays Bank PLC and LookSmart Ltd.

Stockpoint sets up investment portfolios for thousands of customers; those portfolios automatically report back to investors twice each day. The company also provides an alert service that notifies a customer when a company makes a move that could affect the price of its stock.

Yamauchi's team had built a homegrown system to handle both chores, "but as we started to grow, it became obvious we couldn't scale beyond what we were already doing," he says ruefully. "We needed to send out several hundred thousand

e-mails per day, but it was taking many more hours than we had to complete each job.

"The half-life of financial information is very short," Yamauchi says. "If we don't get the news out on time, we might as well forget it." Stockpoint examined commercial alterna-

tives to its homegrown system and decided on BoldFish because it already had a track record in the mass e-mail handling space.

BoldFish's co-founders started with a strong pedigree in online mailings. Co-founder Tasos Kotsikonas, for example, was the original designer of listproc, a Unix mailing list, newsgroup and file-handling system that remains one of the more popular mailing-list manage-

ment systems on the Internet.

BoldFish software takes over from more conventional message transport architectures such as Simple Mail Transfer Protocol (SMTP). Traditional outgoing mail servers handle bulk messages as thousands of separate e-mails that are written — sometimes several times — to a storage queue for transport.

High Performance Delivered

BoldFish, in contrast, stores only a master copy of the message content, combining it many times with mailing addresses and other information from a SQL database. The actual message that will be mailed to the customer is assembled on the fly, without SMTP's additional writing and queuing. The result, says Yamauchi, is that bulk messaging can be sent much faster than with conventional e-mail systems. According to BoldFish's acting CEO, Barbara Tallent, the BoldFish system can ship as many as 500,000 messages per hour.

The system offers other advantages, such as faster recovery and resend if the server crashes during transmission. "All we have to know is where we left off," says Tallent.

"We simply resume at that point, without dropping or duplicating messages."

Moreover, BoldFish also manages the mail that doesn't get through.

Between 2% and 20% of all bulk message transmissions are returned as unsubscribed requests, failed addresses or retries. BoldFish can distinguish between several types of failed transmissions, says Yamauchi, and will either try to resend a message, update the database or forward the failed message to someone for further action.

"Too often, the problem of bounced messages is just an afterthought, and that's the way it was for us," says Yamauchi. "The sheer volume of bounced e-mails was really clogging up our customer service department," a problem that's been "mostly alleviated" by BoldFish.

The BoldFish software supports Windows NT, Linux and Solaris platforms and works with most SQL databases, including Oracle, Sybase and Microsoft Corp.'s SQL Server. ▀

the buzz

STATE OF THE MARKET

Market Bulks Up

The market for bulk e-mail is massive and promises to get even bigger. Cambridge, Mass.-based Forrester Research Inc. estimates that today's roughly 3 billion commercial e-mail messages will shoot to more than 250 billion in two years. Studies conducted by Aberdeen Group Inc. and Jupiter Communications Inc. clearly point to e-mail as the most cost-effective way to maintain a relationship with a customer.

Rolling Your Own

Homegrown mass e-mailing systems such as the one developed by Stockpoint are BoldFish's biggest competition, according to acting CEO Barbara Tallent. Often, the systems are a combination of custom development and existing public domain or open-source tools. Many custom implementations, however, concentrate on the sending portion of the equation and don't always automate the handling of returned mail, one of BoldFish's strengths.

Bulk E-Mailers

Lyris Technologies Inc. in Berkeley, Calif., offers an e-mailing list processor system that includes many of the bulk e-mailing features of BoldFish, although it's geared mostly toward shipping messages out, not handling them automatically when they're returned unread.

BoldFish may see keener competition from e-mail services themselves. Companies such as Digital Impact Inc., MessageMedia Inc. and Software.com Inc. have already made serious inroads into the bulk messaging business.

BoldFish can't match the hands-off nature of these outsourcers, but it can easily compete on price, says Tallent. Typical bulk e-mailing costs range from .25 to .75 cents per message, according to research conducted by Computerworld. BoldFish's one-time charges compare favorably, say analysts.

Automated Delivery

BroadVision Inc., Vignette Corp., E.piphany Inc. and Broadbase Software Inc. all automate information delivery to some extent, and many companies are investigating bulk e-mailing tools as add-ons to their existing products. Most have a broad base of existing customers who could easily slip the new features into the corporate infrastructure, say analysts. BoldFish is readying cross-licensing agreements to forestall the competitive threat, says Tallent.

— Cynthia Morgan



"THE EXPLOSION OF bulk messaging . . . caught the networks off guard," says BoldFish's acting CEO, Barbara Tallent

BoldFish Inc.

Location: 471 El Camino Real, Suite 110, Santa Clara, Calif. 95050

Telephone: (408) 236-3620

Web: www.boldfish.com

Niche: High-performance bulk e-mailing system

Why they're worth watching: High-speed, high-volume messaging can take a heavy toll on corporate messaging infrastructure and conventional customer service systems. BoldFish's on-the-fly content creation and return message handling can eliminate many of those problems at potentially lower cost than e-mail outsourcing services.

Company officers:

- Tasos Kotsikonas, Dean Drako, Rob Anue, co-founders
- Barbara Tallent, acting CEO
- Peter Moore, chief technology officer

Milestones:

- 1997: Company founded as E-mail Solutions Inc.
- 1998: BoldFish ships
- 1999: Round one venture capital

financing; company name changed to BoldFish Inc.

Employees: 35; Expects to grow by about 50% during the next six months

Burn money: Alloy Ventures Inc., Mayfield Fund and Stanford University provided BoldFish's first round of venture capital financing.

Products: BoldFish enterprise software, BoldFish Marketing QuickStart customized consultation, BoldFish Professional Services end-to-end consulting

Customers: Colgate-Palmolive Co., Stockpoint Inc.

Partner: E.piphany Inc.

Red flags for IT:

- Today's outbound mailing systems really aren't meant to handle massive, regular volumes of mail, and the problem is becoming acute.
- Many firms have already developed in-house mailing solutions.
- Although BoldFish's software license includes some tough language to prevent customers from spamming, it remains a liability.

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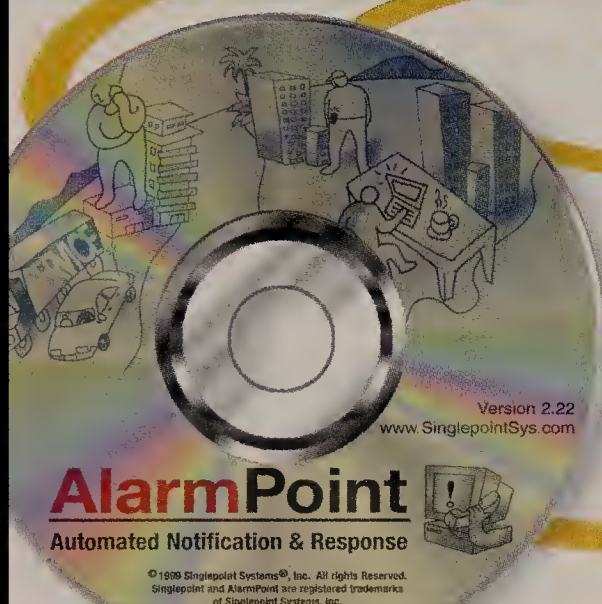
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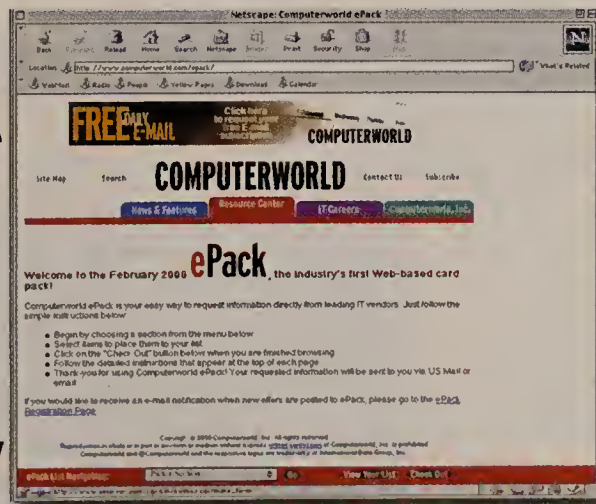
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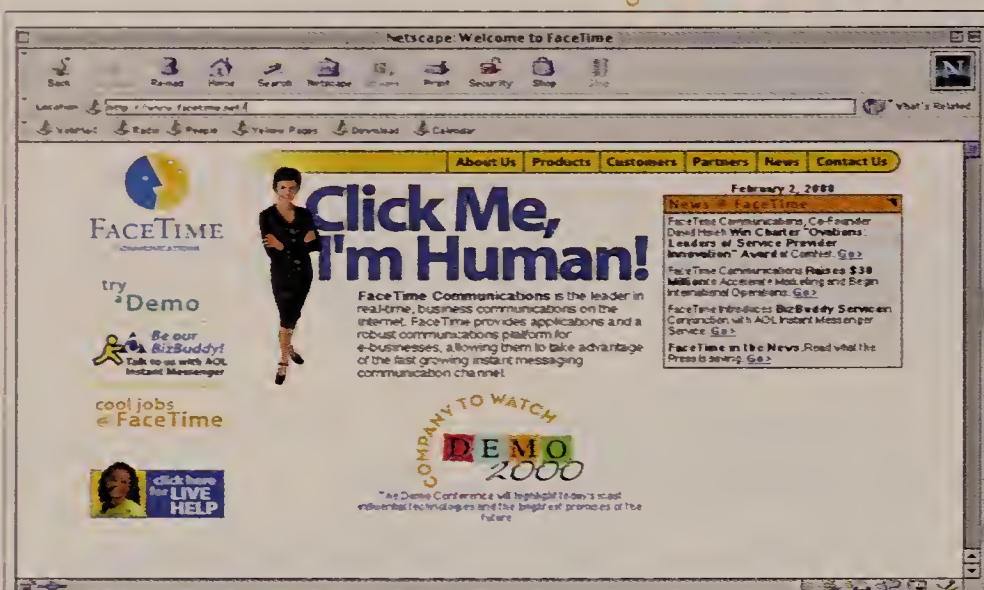
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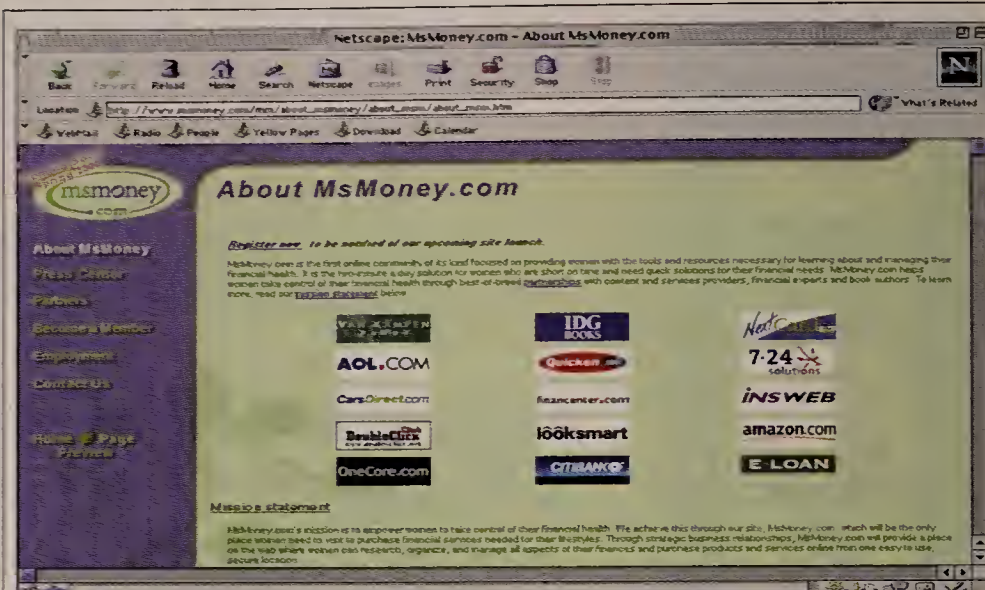


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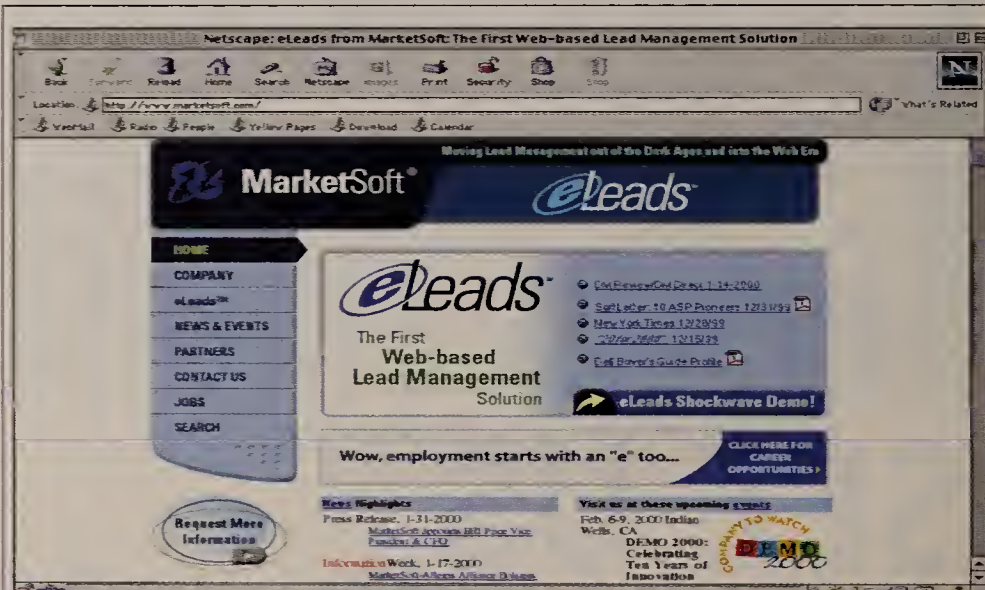
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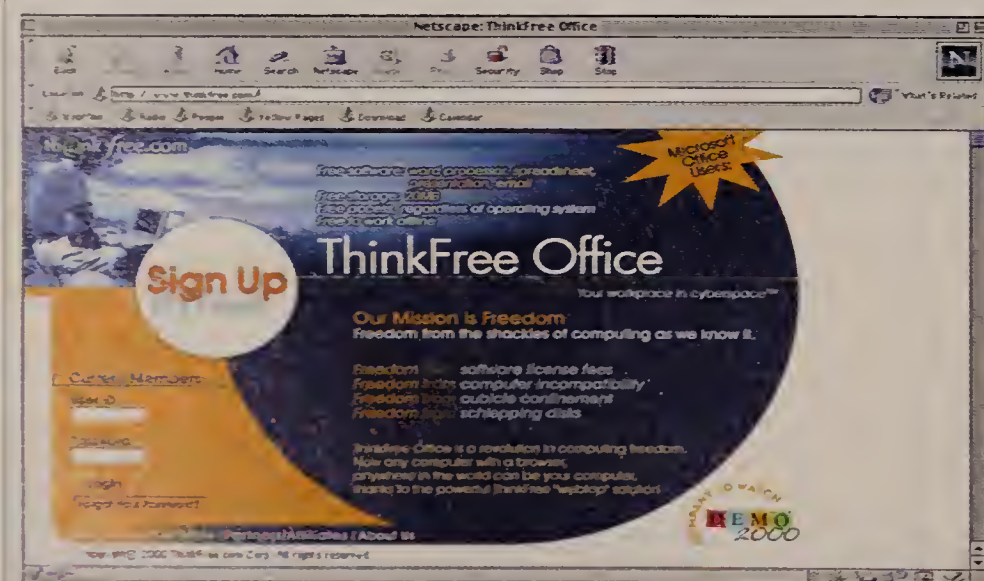
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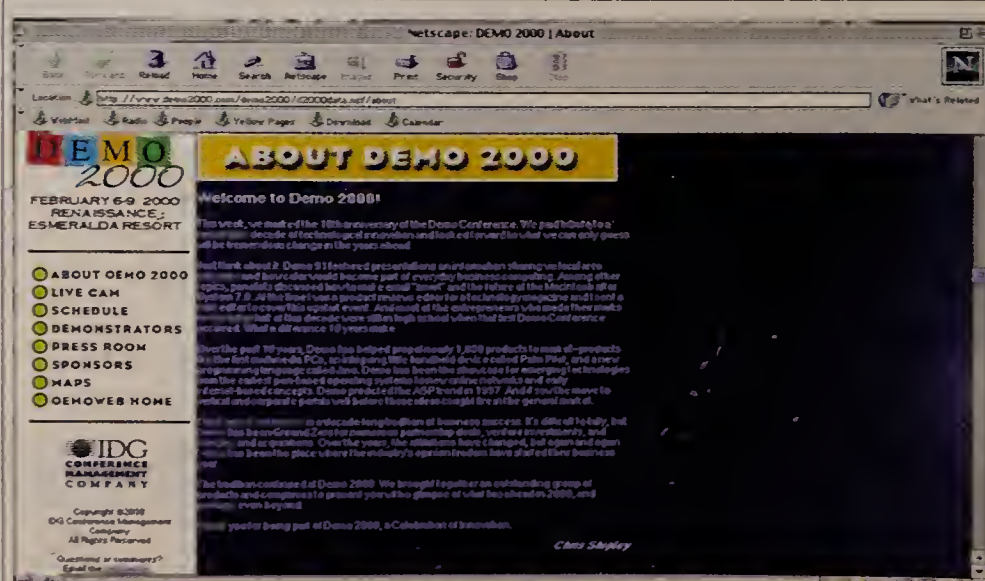
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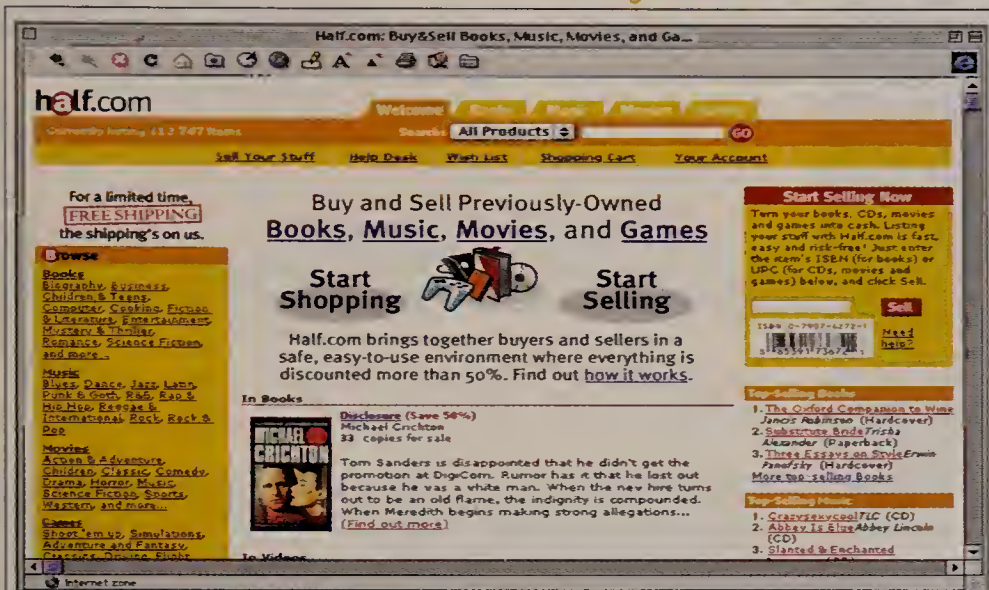
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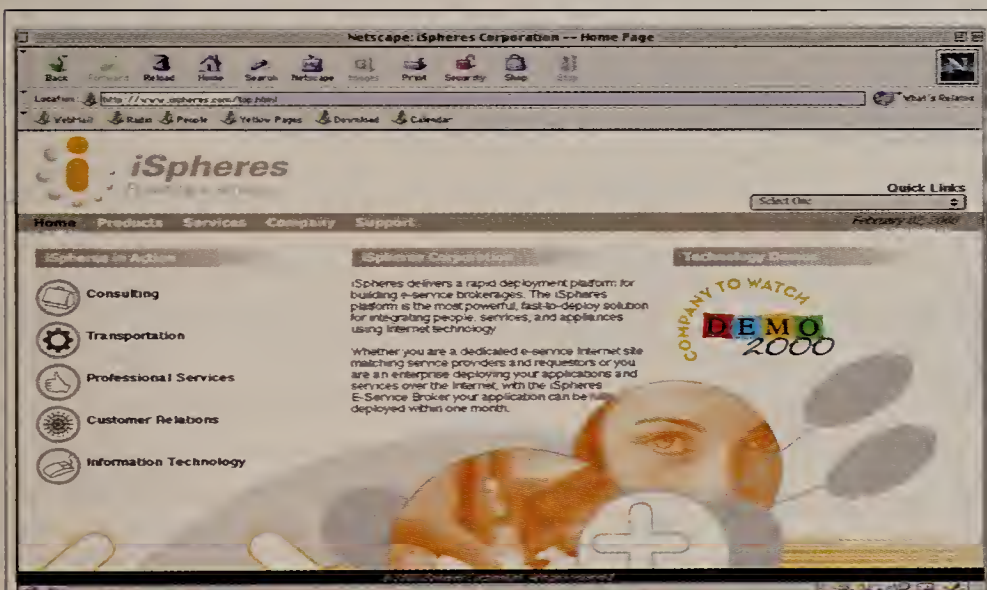
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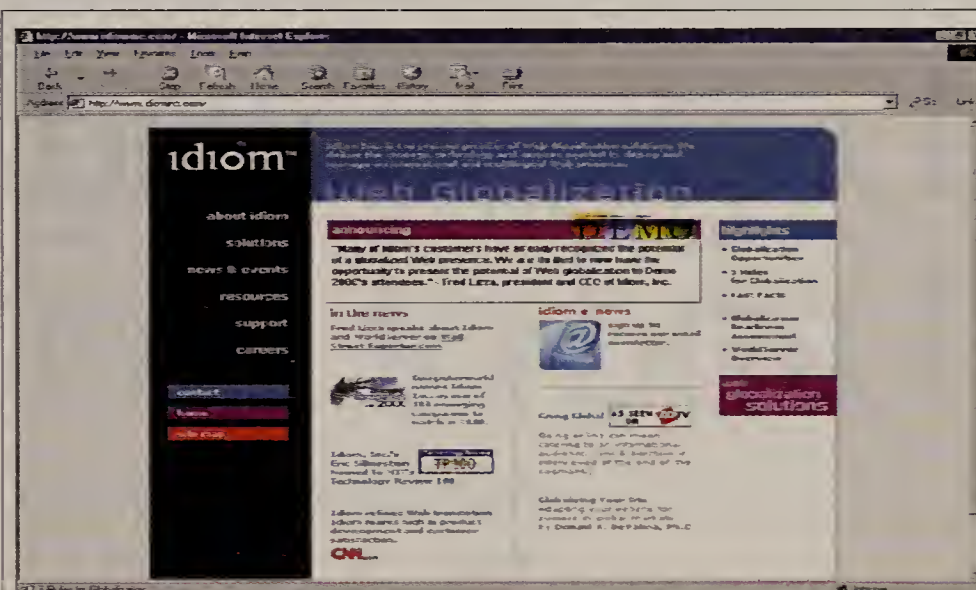
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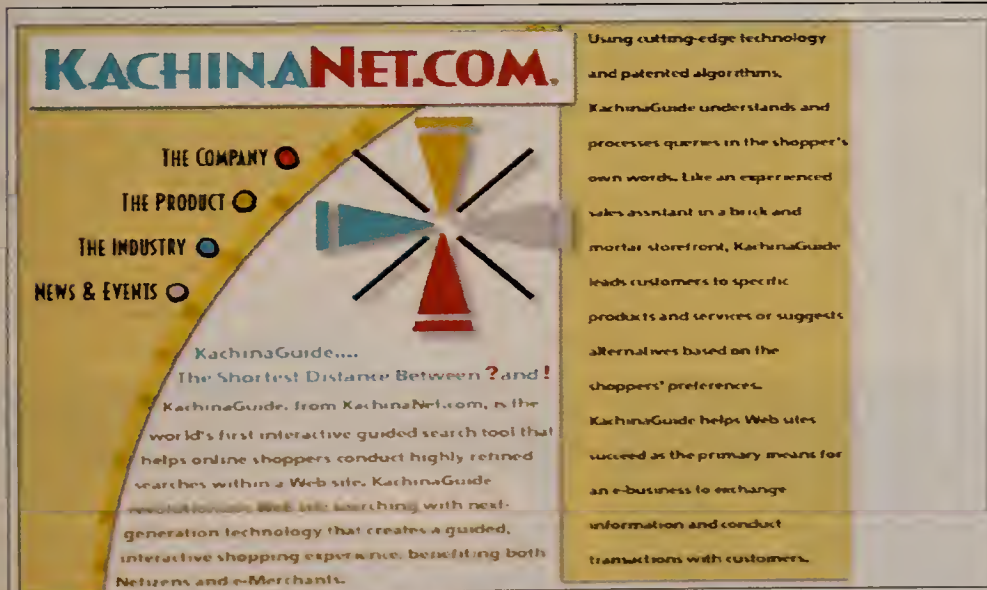
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ALL PHOTOS BY ROBERT LIPPER

Long Island — Land of Plenty

The biggest island on the East Coast offers the good life, great neighbors and a growing high-tech job market. By Erik Sherman

TIME FOR a career search in person? Climb into a cab and let Max take you to Long Island, N.Y. — proof that you can have a hot job market and lots of people and still leave room for beaches and farms.

"What, you think Long Island is Alec Baldwin and Kim Basinger throwing fund-raisers in the Hamptons?" Max yells while dodging a slow-moving Yugo. Max, who preferred to go by only his first name for this article, agreed to show *Computerworld* the sights on Long Island. "Things were dead here in the late '80s and early '90s. Defense contractors like Fairchild and Grumman got hammered, and engineers were out of work everywhere. But look at us now!"

The battered yellow car stops

outside the Long Island Tech Center, a 355,000-square-foot building formerly owned by Los Angeles-based Northrop Grumman Corp. on an 82-acre site in Islip.

"The venture-capital people are starting to come here," says Peter Goldsmith, president of the Long Island Software and Technology Network (LISTnet). "They realize that Long Island is an untapped market."

As an example, Goldsmith points out that LISTnet has more than 720 member companies and 60 major corporate sponsors. In addition, he says, he estimates there are another 900 technology companies that aren't members.

On the Road Again

You and Max are back on the road. Each drive is long — and no wonder. Long Island is big: 118 miles long, with 2.65 million people. This isn't a land for people with a morbid fear of strangers or highways. The next destination is Hauppauge, home to Bascom Global Internet Services Inc. — just down Interstate 495 from Computer Associates International Inc. in Islandia and hardware manufacturer Symbol Technologies Inc. in Holtsville.

"There are large anchor companies, like Computer Associates and Symbol Technologies, that act as a draw," says Bascom President Peter Cira-sole. "It's great for people in the industry working for those companies, because if they decide to leave where they are, there are many more opportunities around them."

But the good life here comes at a price. According to Cira-sole, monthly rents for one-bedroom apartments start in the \$700 to \$800 range. A starter home costs \$150,000, but "the sky's the limit" for the upper end of the real estate market.

Even tougher are heavy taxes. "I know people who live in a 900-square-foot condo, and they pay \$4,000 a year," says Cira-sole.

Over on the north shore, you'll find The Collaborative Group Ltd., a biotech firm that has approximately 260 employees and has seen 25% annual growth. But industry growth doesn't guarantee that you'll find a job. There's plenty of local competition.

"Most [of our IT hires] have been from the area," explains

AT A GLANCE

A Snapshot of Long Island

Top industries for IT hiring

1. Biotech
2. Electronics (non-defense-related)
3. Graphics communications
4. Health information and medical systems
5. Computer software

IT jobs most in demand

1. Java and C++ application programmers
2. System architects
3. Web designers and programmers
4. System programmers/system analysts
5. E-commerce specialists

Long Island facts

- 2.65 million people
- 125 public school districts and 233 private schools
- 88.4% of high school students enter postsecondary education
- 17 four-year colleges, 8 two- and three-year colleges, 5 professional institutions
- 26 hospitals
- Long Island Railroad is the nation's largest commuter railroad, with 741 trains operating each weekday
- Five airports
- Long Island is the 19th-largest housing market in the U.S.
- More than 100 museums; 15 state parks; 92 beaches; 46 golf courses; 33 tennis clubs

Charles Ryan, vice president of technology management and general counsel at The Collaborative Group. "I don't think we've ever relocated someone here. I think if someone had a very specific skill base and someone was looking for it, they could find themselves in a position to be relocated here."

"Hey, you want to go east and see some beaches and vineyards?" asks Max. You look at the map, realize you've been on the move for hours and then tell him to drive on. If nothing else, a good bottle of wine may help you forget the size of the cab fare. ▀

Sherman is a freelance writer in Marshfield, Mass.

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Farm stand in Bridgehampton



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The Exeter Group, a consulting and software development firm based in Cambridge, MA, is seeking Software Engineers to design, develop, test and implement software. Requirements include a Bachelor's degree in a computer or related engineering field. Resumes to: HR, The Exeter Group, 201 Broadway, Cambridge, MA 02139.

Software Engineer

Design, develop and implement Geographic Imaging and Geographic Information System software products using object-oriented methodology, C/C++, MS Visual C++/MFC, MapInfo/MapBasic, MapObjects, and Oracle/SOL on Windows 95/98/NT and UNIX platforms. Req. MS in CS plus 1 yr exp. in job offered. Resume referencing job #ENG2002 to: Sheila McShane, ERDAS, Inc., 2801 Buford Highway N.E., Atlanta GA 30329.

Sr. Electrical Product Design Engineer

Research, Dev., Design, Simulation and Verification of PCBs and electrical systems. Supervise and coordinate all facets of Logic & Physical design and verification of system level functionality and timing including synthesis. Requires a BSEE and 5 yrs exp. performing design & simulation as a design engineer using EDA tools and Cadence SpectraQuest. \$80,184/yr. 2 resumes to: Job Order #2000-047, P.O. Box 989, Concord, NH 03302-0989.

Programmer Analyst, Malden, MA; Analyze, design, develop and implement client-server applications using Microsoft SQL Server, Sybase SQL Server, PowerBuilder and Visual component Tools. Req'd. Masters* in Electronics Comm. or Comp. Scie. or Engg. or Math. 1 yr exp in job offered. *Will accept Bachelors degree and 5 yrs of experience in lieu of Masters. 40 hrs/wk., 9a-6p., \$68,000/Yr. Applicants should submit two (2) copies of resume in response to Case #199983289, P.O. Box 8968, Boston, MA 02114.

DATABASE ANALYST

Database Analyst sought by a California-based software company for job opening in New York, NY. Must have BA in Comp Sci., Comp. Eng. or Math & 2 yrs. exp. analyzing, dsngng & implementing logical & physical database schemes for enterprise reporting based on relational & multi-dimensional database systems using SOL. Respond to: Gino Cesario, Software Technologies Corp., 404 E. Huntington Dr., Monrovia, CA 91016. EOE

Systems Analyst

Malden, MA; Develop and test Client-Server applications using PowerBuilder, Stored Procedures, Triggers and PL/SQL for Oracle Database on HP-UX platform. Provide technical support. Req'd Bachelors in Comp. Engg. or Comp. Scie. 1 year exp in job offered or 1 year exp as a Programmer Analyst. 40 hrs/wk., 9a-6p., \$60,000/year. Applicants to respond to: Case # 19983142, Po Box #8968, Boston, MA 02114.

Systems Analyst

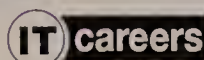
\$45K; 8a-5p; 40hrs/wk; Analyze, dsngn, dvlpt, test & impmnt systems using Sybase, SOL, PowerBuilder, VisualBasic, C, COBOL, Focus, APT, DWB, SOR, VAX-DCL & DB-Library routines; Bach or equiv in Comp Sci or Engg; Electr or rel field of Engg, Math or Stats; 2 yrs exp as Sysrms/Prgmr Analyst or related pos. Job Loc in Alpharetta, GA Send resume to: Unilinx, Inc. 525 Tumbling Creek Dr., Alpharetta, GA 30005.

PROGRAMMER ANALYST

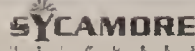
wanted by Information Technology Firm in Union, NJ. Must have BS in any field & 3 yrs Oracle Database with emphasis on PL/SQL & Pro*C dvlpmnt exp. Pharmaceutical industry is a plus. Respond to: HR Dept, Patel Consultants Corporation, 1525 Morris Avenue, Union, NJ 07083.

We have multiple openings for Software Engineers, System Analysts, Programmer Analysts, and Project Engineers with the following skill sets. SAP, Baan, Peoplesoft, Oracle Apps, Sybase, AS/400 VB, PB, JAVA, JavaScript, PERL, CGI, HTML, XML, C, C++, OOPS, NetDynamics, Weblogic and LotusNotes. We also want Marketing Executives. 40 hr/wk, 8-5pm, competitive salary. send resumes to Saras America Inc 12818 Tournament Dr Reston, VA 20191

Software Designer & Programmer wanted by S/ware Dvlpt & Sales Co in Orlando, FL. Must have Bach in Comp Sci or Elec Engg & 2 yrs exp Respond to: Stuart C. Kirbam, Software Answers, Inc., 1320 N Semoran Blvd 205, Orlando, FL 32807.



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- Network Consultant
- Mechanical Engineer
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The aforementioned positions are available at all levels and require a minimum of a BS or MS and 0-5 years industry experience.

• Optical Engineer/Scientist with experience in Optical, IP, ATM, SONET, network architecture and design. Ph.D. required.

For all positions, send resumes to: Staffing, Sycamore Networks, 10 Elizabeth Drive, Chelmsford, MA 01824, Fax: (978) 256-6594, or e-mail: resume@sycamorenet.com

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Technical Applications Specialist/Lead Database Administrator to analyze business requirements and generate SDS documents and data/process models. Design, develop, implement and support GUI based Online transaction processing (OLTP) systems using multi-tier client server architecture. Design data warehouse in Oracle and develop the interface procedures in PERL/PL-SQL for data migration from old legacy systems to Oracle. Design the systems/database architecture from case to case basis. Provide technical consulting and support for system/database issues for team members and various business units. Performance tuning of Oracle databases specifically in OLTP/Warehousing environments using STAR schema and bitmap indexes. Design and implement data replication models using Oracle databases. Develop technical white papers and business proposals. Plan and perform systems benchmarking and prepare the evaluation reports. Working knowledge of Web applications/Servers. Requires M.S. in Computer Science, Electrical Engineering or Mathematics and three (3) years experience in job offered or three (3) years experience designing and developing GUI based client/server applications OR B.S. in Computer Science, Electrical Engineering or Mathematics and five (5) years experience in job offered or five (5) years experience designing and developing GUI based client/server applications. Candidate must also possess demonstrated expertise in database system migration; demonstrated expertise designing data replication models using Oracle databases; demonstrated expertise performing data and business process modeling using tools; and demonstrated expertise analyzing technical and system requirements and developing white papers/proposals for business solutions. Salary: \$72,000/yr, Mon-Fri, 9:00AM-5:00PM. Send resumes to: Case Number 19983169, P.O. Box 8968, Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

DIRECTOR OF INFORMATION TECHNOLOGY Atlanta

CB Richard Ellis, a global leader in commercial real estate services has an opportunity available for a Regional Director of Information Technology.

Based in Atlanta, position responsibilities include management of regional hardware and software technicians, planning, researching and analyzing software and hardware requirements for the Eastern Region in support of corporate strategies. Must possess and apply comprehensive knowledge of software and hardware applications to complete complex assignments and develop implementation plans for new programs. Requires Bachelor's degree along with training in advanced software programs, previous management experience, and minimum of 5 years' experience.

Please send resumes including salary history to: **CB Richard Ellis, Attn: V. Willenbrock, 3399 Peachtree Road, Suite 1900, Atlanta, GA 30326 or fax to 404/814-9514. EOE.**

CB RICHARD ELLIS

Senior Software Engineer -

East Haven, CT. Require experience in design and development of commercial software using Visual Basic and SQL Server. Attractive compensation package. Send resume to Carol Keen, Professional Pensions Inc. 444 Foxon Road, East Haven, CT. 06513.

Programmer Analysts/Software Engineers/Management Analysts/Projects Managers. Growing s/ware dvlpmnt & consulting firm seeks candidates to fill immediate openings. Positions available in NY/PA & other unanticipated client sites nationwide. Qualified candidates must have Bach or equiv in Comp Sci, Electronics, Engg, Math or Mgmt & 3 yrs exp. Sal. commensurate w/exp. Detailed resumes to: Quantum Technologies, Inc. 59 John St, NY, NY 10038. EOE Employer.

SOFTWARE ENGINEER

Usage of Common Management Information Service/Common Management Information Protocol (CMIS/CMIP), Open View Distributed Management (OVDM4.1), and XMP/XOM to develop Networking Management Software for Distributed Networks. Experience in the usage of Transmission Control Protocol/Internet Protocol (TCP/IP) and Simple Network Management Protocol (SNMP) to develop Networking Management Software for ATM switch and Telecommunication Netw. Ability in the usage of File Transfer, Access & Management (FTAM) to develop Byte Stream File Transfer Software for Internet work Environment. Working knowledge of X-400, X.25, P1, P2, P3, and P7 Protocol to develop E-Mail software. The job duties are: analysis of current procedures and problems to refine and convert the data to programmable form; determine output requirements; study existing system to evaluate effectiveness; upgrade system presently in use; develop, test and implement new software; correct systems/programs as necessary. Requires Bachelors in Computer Science with two years experience in software development. 40 hours per week at \$65,000 per year. Please send resume to Case #19983422, PO Box # 8968, Boston, MA 02114.

NetGuru Systems, Inc. the fastest growing Technology Company in the 1999 New England Fats-50, currently has multiple openings in each of the following positions:

Senior Software Engineer-Lead a development team in design, development, testing of Internet, database applications using one or more of the following: C/C++, VB, Java, Active Server Pages, or database administration of Informix, Sybase or Oracle. Requires Master's degree or Bachelor's degree +5 years experience.

Software Engineer-Design, develop internet applications, database applications using one or more of the following applications: Interdev, VB, HTML/DHTML, JAVA, JDBC, JDK, JavaScript, SOL, Windows NT, Unix, DOS, Data Modeling, Data Migration, Informix, Sybase, Oracle, Client/Server. Requires: Bachelor's or equivalent with 2 years experience.

OA Test Engineer-Perform automated or manual software testing and QA using any tool (Win Runner or QA Partner or SQA Robot). Requires Bachelor's or equivalent with 2 years experience.

Multiple openings for programmer Analysts/Software Engineers/Unix System & Network Engineers/Project Leaders. Candidates must have minimum BS/MS in Computer Science or related field and exp. in one or more of the following areas: Object Oriented programming, WAN, C/C++, Corba, Oracle, Java-Internet Development, Sybase Application Development, Database Warehousing, side development, Back Office Server, Sun Servers, NT engineering-exchange, SMS, Middleware development, Sun OS, Unix-Solaris System & Network Administration. Pls submit resume with salary requirements to: Open Systems Technologies, 155 Massachusetts Ave., Ste # 301, Boston, MA 02115.

Senior Software Consultant

wanted by New Jersey based IS/IT Professional Consulting Services Firm for job locs throughout US. Must have Masters or equiv in Comp Sci/Engg & 2 yrs exp in s/ware consulting. Respond to: HR Dept, eComServer, Inc., 116-200 Village Blvd, Princeton, NJ 08540.

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Currently, we have openings at client sites in New Jersey & throughout the US for the following IT professionals:

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- Systems Analysts
- Sr. Systems Analysts
- Software Engineers
- Database Administrators
- Network Systems Engineers
- COBOL, CICS, DB2
- POWERBUILDER
- VISUAL BASIC
- VISUAL C++
- C/C++/UNIX
- MS/EXCEL *SQL SERVER
- WINDOWS NT
- JAVA/JAVA SCRIPTS
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- ORACLE PL/SQL
- MS/ACCESS
- SAP R/3
- LAN/WAN

We'll provide you with a stimulating supportive environment, attractive salaries and benefits including: Tuition Reimbursement, 401K Savings Plan Company Matched, Life, Health, Dental Plan, On-Going Technical Training and Employee Assistance Program. Please forward your resume to: Tom Culmore, Staffing Manager, Dept 0221, COMPUTER HORIZONS CORP. 49 Old Bloomfield Avenue, Mountain Lakes, New Jersey 07046-1495. Call 973-299-4000 or 1-800-321-2421. Fax: 973-331-1632. E-mail: jobs@computerhorizons.com (in MS Word format only, please) Please visit our website at <http://www.computerhorizons.com>. An Equal Opportunity Employer M/F.

DIRECTOR OF DEVELOPMENT

Manage team of developers. Establish research, programs, policies, procedures and keep current on tech. progress. Establish long term goals. Knowledge of computing environments is essential. Background in mainframe technology, client server hardware, operating systems. Programming languages Cobol, JCL, Assembler. Knowledge of Oracle database, communications, networking. Req: B.S. in Comp. Systems Analysis, Comp. Eng. or related and two yrs, exp. in job offered or as Systems Analyst. Four yrs. of exp. in job offered or as Systems Analyst may be substituted for req. of B.S. and 2 yrs. exp. Competitive/prevaling wage. 40 hrs/wk. 8-5pm. Send resume to: Allen Systems Group, Inc., Corporate Recruiter, 1333 Third Avenue South, Naples, FL 34102.

SYSTEMS ANALYST

(Nashville, TN) Enhance/extend existing environ, design/implement new info systems; document system reqts prepare programming & system specs, time estimates & project schedules; prepare materials & conduct end user training; modify existing database. Bachelor in Computer Science or equiv, 2 years exp as Programmer/Analyst, proficiency w/ PROGRESS, Webspeed UNIX, HTML & Java reqd. Send resume to: Kim Thompson, 750 Commerce Dr, #100, Decatur, GA 30030.

Computer Programmer/Analyst-Design, develop, and implement various computer software applications, including commercial, financial and management information systems. Responsible for coding, testing, debugging and documentation. Involved in all phases of applications systems analysis and programming. Build support systems for client server environment using OOD methodologies and work with multi-tier client server applications. Duties entail work with Microsoft Visual C++, Oracle, Windows NT, VB and Pro*C. Requires Bachelor's degree (or equivalent-employer deems four years of employment in related occupation as meeting the degree requirement) in Computer Science, Engineering, Math or related field and 2 yrs experience in the job offered or as a Computer Consultant, Data Center Officer, or Systems Analyst. Experience must involve work with Microsoft Visual C++, Oracle, Windows NT, Visual Basic, OOD Methodologies and Pro*C. n/a. All resumes must include the applicant's Social Security number. The Job Order number is NC5702966 and DOT code is 030.162-014. Interested applicants should apply at the nearest Job Service office or submit a resume to Job Service, 742-F East Chatham Street, Cary, NC 27511.

BOSE Corporation, an innovative leader in consumer electronics and acoustics, has an immediate need to fill a range of SAP, EDI, and Sales Systems Support positions in the Boston area. The following positions all require a Bachelor's degree (or equivalent) in Computer Science, MIS, Business Administration, or similarly relevant field, and 2-6 years relevant experience to include the requirements described below.

PROGRAMMER ANALYST POSITIONS

- Sap Basis Administrators (with SAP experience, involving both Oracle and HP-UX and protocols, in a production environment.)
- EDI Sales Systems Support Programmer/Analyst (with EDI mapping and HP-UX scripting experience, in a production environment.)

Starting salaries range from \$47,100 to \$82,600 per year, together with two weeks annual paid vacation, medical and life insurances, and other industry-competitive benefits. Please mail or fax your resume to: Mr. Donald Baptiste, (IMSP), Bose Corporation, Dept. 5-D-1, The Mountain, Framingham, MA 01701. Fax: (508) 766-7499. Email: don_baptiste@bose.com Visit: www.bose.com

SOFTWARE ENGINEER

Proven ability in working with a variety of microprocessors and micro-controllers like 80C186, 80386, Pentium, 68332. Demonstrated ability in writing device-drivers and in working with real-time operating kernels. Experience in working with assembly and high level languages. Working knowledge in analysis and design with structured and object-oriented, methodologies. The job duties are: study existing system to evaluate effectiveness; upgrade systems presently in use; develop, test and implement new software; observe functioning of newly implemented systems and programs for trouble areas; correct systems/programs as necessary. Requires Bachelors in Engineering with two years experience in software development. 40 hours per week at \$60,000 per year. Please send resume to Case # 19983105, PO Box #8968, Boston, MA 02114.

Networking Engineer (multiple openings) install, administer & maintain Windows NT network; perform network integration; plan, migrate, implement, optimize, configure & troubleshoot; maintain & upgrade services of LAN; & use Windows NT, Novell NetWare, Novell GroupWise, AS400, IBM mainframe, MS-Exchange server, MS-SMS server, MS-SNA server, MS-prosy server, Windows NT workstation on a Token ring & Ethernet LAN and WAN with 3com switches & Cisco routers; Reqs. Bach. in Comp. Sci., Systems Analysis, Comp. Info. Systems, Comp. Engg., Electrical or Electronic Engg., Electronics & Communication Engg. or Mathematics or its foreign educ. equiv. plus 2 yrs exp in the job offered or 2 yrs exp in related occup as a Programmer, Programmer Analyst, Systems Analyst, Data Communications Analyst, Network Engr., Software Engr. or Consultant; \$60,550/yr, 40 hrs/wk, 8a-5p. Submit resume of C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila., PA 19123, J.O. #8059576

Three Software Engineers needed to provide IT consultancy at client sites (company headquarters in Atlanta, GA). These people would assist customers to deploy enterprise applications by performing such duties as solution development, requirements analysis and design, implementation, testing, and maintenance of custom solutions or integrations to off-the-shelf Enterprise software. The positions require: 1) BS/MS degree in Computer Science or related with 0-3 years relevant experience. 2) Effective verbal communications and poise in customer situations. 3) Ability to travel to customer locations. 4) Strong technical skills including Unix (AIX, iP, SUN), Windows and/or NT. 5) Proficiency in OOD. Experience with relational database (Oracle or DB2) is a significant plus. Apply with resume to: Charles Sticksels, Recruiting Manager, Axiom Systems, Inc., 2550 Northwinds Parkway, Suite 440, Alpharetta, GA 30004.

Software Engineer (2 pos) Little Rock, AR. Supv project team to research, dsgn & dvlp comp s/ware systems in conjunction w/hardware product dvlpmnt applying principles & techniques of comp sci & mathematical analysis. Analyze s/ware & performance reqmts to formulate & dsgn s/ware systm; dvlp & direct testing procedures & maintenance of s/ware systm. MS in Comp Sci/Engg w/3 yrs or BS w/5 yrs exp in job offd or related occupation. Must have 1 yr exp w/Group Ware Tools, Lotus Notes, Oracle & Peoplesoft & dvlpg reports using PS Nvision, Crystal Reports SQR & PS Query. 40 hr/wk. \$70K/yr. Apply by resume to: AR Employment Security Dept, Little Rock, AR 125 W. 4th St, or send resume to PO Box 2981, Little Rock, AR 72203, JO #0008912, Attn: David Hayes.

A leading consulting organization experiencing phenomenal growth seeks to augment its technology capabilities require software professionals in the e-business/enterprise integration/CRM practice. The candidates should have at least 2-3 years of professional experience in any of the following skills: C, C++, Java, XML, Powerbuilder, Visual Basic, Foxpro, Visual Foxpro, J Builder, Visual Interdev, Cold Fusion, Broadvision, Oracle DBA, DB2DBA on various platforms. BS degree (or equiv.) and two years experience with the above skill set for Programmer Analyst or MS degree (or equiv.) and 1 year experience for Software Engineer. Travel and relocation. Excellent Benefits. Apply to: Attn: Recruiter, Infoplus Inc. 1114 Colehurst Crescent, Apex, NC 27502.

Akshay Software International Inc. requires professionals with skills in the following:

1. Oracle SQL Forms, Pro*C, PL/SQL, SQL Report Writer, UNIX
2. Visual Basic, Visual C++, OLE, COM/DCOM, ActiveX with Oracle or SQL Server
3. Power Builder, PFC, SQL Server/Oracle/Informix
4. Centura/Gupta SQL Windows, SQL Base/Oracle/SQL Server/DB2
5. AS/400, RPG/400, COBOL/400, DB2/400 SYNON or EDI is plus
6. PROGRESS Developers
7. DBAs: Oracle, SQL Server, DB2, IMS
8. ERP Skills: MFG/PRO, JD Edward, Oracle Financials/Manufacturing, SAP, BAAN, PeopleSoft. Also requires Sales Professionals. Applicants should have excellent communication skills. We offer a competitive compensation package. Send resume to HR: Fax: 732-248-1666 Email: hr@akshay.com

Positions available at InteQ Corporation, a Burlington, MA based company that provides high quality IT Service Management (ITSM) consulting services to Fortune 2000 companies. Various levels of positions requiring Bachelor's or Master's degrees or equivalent in a computer or engineering related field; some require industry experience. Specific requirements depend upon level of position.

Technical Consultants
Software Engineers
Director of Software Operations

If interested and qualified, forward resumes to: Human Resources, InteQ Corporation, One Van de Graff Drive, Burlington, MA 01803.

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- Design, develop, model, and implement system solutions
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- Configure & support Network OS components

Positions require a degree in computer science, information systems, engineering, or other related field. Some require industry experience. If interested and qualified, forward resume to: Jeanne Maloney, Compaq Computer Corporation, 40 Old Bolton Road, Stow, MA 01775.

Infoscore, Inc seeks Systems Engineers to provide software engineering/consulting services in project design, development and implementation. Performs systems testing and security analysis of financial mgmt and commercial systems. B.S. in Comp. Sc. or equiv. + WinNT, Visual FoxPro and C++ exp. req'd. Competitive salary & benefits. Send resume to PO Box 1757, Ft. Mill SC 29716 or e-mail to 'egregory@infoscore-world.com.'

Full time Programmer Analyst to develop, modify and maintain applications that are customized or standardized using ER Diagram, PL/SQL, Oracle Developer 2000, Forms 4.5, Reports 2.5, Oracle 7 database. Must have a Bachelor's degree in Computer Science or foreign degree equivalent. Must have one year of experience in the job offered or one year of experience in a position with same duties. Salary \$59,774-62,920/yr. Send resume to DataScan Technologies 1105 Sanctuary Parkway, Suite 100, Alpharetta, GA 30004 Attn: Karen Hutton

Software Consultant

Provide services & technical support to clients in design & development of business applications, corporate systems, design, build & integrate modules & interfaces, migrate data, convert & update systems, modify & run batch programs, provide Internet services & networking between remote users & servers. Work with HTML, Novell NetWare, Sybase, Powerbuilder, FoxPro, SQL Servers, MS Access, Turbo Analyst, Visual Basic, Cobol, C++, WindowsNT & WFL. \$60,000/yr. B.S. or equiv. in Computer Sc., Computer Eng. or Electronics & Communications Eng.; B.S. in other fields such as Math or Bus. Admin accepted with add'l courses in Computer Sc., or Computer Eng.; 2 yrs. exp. req'd in job offered or 2 yrs. related experience as Systems Analyst or Programmer Analyst, to include use of noted skills in job duties; M.S. & 1 yr. exp. accepted in lieu of B.S. & 2 yrs. exp. & B.S. or M.S. may be foreign equivalent degrees. Will work at unanticipated locations in the U.S. Send 2 resumes to the GA Dept. of Labor, Job Order #GA6452876, 1535 Atkinson Rd., Lawrenceville, GA 30043-5601, or the nearest Dept. of Labor Field Service Office.

Systems Engineer:

No exp. Req. Assess technical requirements of customers and develop E-commerce network for Internet. Develop and deploy high performance Internet selling systems using JAVA, WWW Architecture with GUI interface using HTML and XML. Act as a technical consultant to integrate internet selling systems to customer database systems, provide connectivity to ERP systems and incorporate SFA and CRM modules. Plan Selectica's product deployment, project management and administer installations at customer sites. Monitor target markets and latest computer related technical architecture developments of Selectica's products. Req. Bachelor's degree in Computer Eng., Electrical/ Electronics Eng., or Computer Science. 40 hr. wk. Job/Interview site: San Jose, CA. Please send ad & resume to: Selectica Inc., PO Box 641210, San Jose CA 95164-1210.

Genesis Development, world-class provider of enterprise middleware strategies & solutions, seeks experienced architects and designer/developers to join its worldwide consulting practice. If you want to join one of the fastest growing high-tech companies in the country, are experienced in advanced middleware development using component technologies (EJB & CORBA), possess a Masters degree or equivalent work experience and have excellent professional qualifications, send your resume in complete confidence to Genesis Development, 10 North Church Street, West Chester PA 19380; by fax to 610-429-1554 ATTN: Human Resources, or by e-mail to recruiting@gendev.com.

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COMPUTER AIDED DECISIONS, INC., a small Boston-area company engaged in the design and development of sophisticated software-based investment systems, has a need to fill a **Chief Programmer / Object-Oriented Investment Software** position. This position will be responsible for managing in-house and contract software teams developing highly sophisticated, large-scale applications for portfolio management, trading, and investment research.

- Requirements include a Bachelor's degree in C/S or other quantitative / engineering field, and five (5) years experience involving object-oriented software development, inclusive of large-scale development for investment applications.

- Starting salary ranges from \$90,000 - \$110,000, three weeks paid vacation, medical insurance, and other industry competitive benefits.

Respond with resume only to: Ms. Pam Tapia, Computer Aided Decisions, Inc., 21 Custom House Street, Boston, MA 02110. Fax: (617) 428-3606. An EOE-MFDV.

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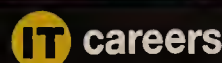


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needed to design, develop, code, test, implement, debug, optimize and provide user support and user documentation for protocol stacks (i.e., kernel-mode or user-mode drivers) for various data base systems (such as Oracle), and database applications for various clients, using, for example, the following languages: C, Visual C++, SQL, ABAP; tools (ClearCase, MS VC++, MS Word, Softice); protocols TCP/IP, NDIS and ODBC; and operating systems: UNIX and Windows NT. Sal. @ \$72,000/yr.; O/T @ \$36/hr.; 40 hr/wk.; 8am-5:00pm; Req's BS in Comp. Sci or rel. field and 2 years of relevant experience; travel/relocation may be required; requires knowledge of RDBMS, Network Protocols, and Kernel-mode drivers as shown by studies or work experience. Mail two copies of resume and copy of this ad to Department of Labor, Licensing and Regulation, 1100 North Eutaw Street, Room #201, Baltimore, MD 21201. Job Order No. 9684088. Job Location: Columbia, MD and Multiple Sites in the U.S.

Senior Software Engineer Positions to design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience in job offered or as a computer professional as well as 1 year of skills in one of the following fields: SAP, Baan or PeopleSoft. Master's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math or Physics or scientific or business related field. Will accept Bachelors degree with five years of progressive experience as computer professional. Salary: \$105,000 per/yr. 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Jaime Lopez, Rapidigm, 4400 Campbells Run Road, Pittsburgh, PA 15205.

Programmer/Analyst

Will design, develop and implement customized software applications on the AS/400 system for clients using COBOL and RPG/400. Requirements: Bachelor's degree or equivalent in Computer Science, Engineering or related field and 2 years of experience in job offered or 2 years in application development in AS/400 environment. Such experience must include: COBOL and RPG/400. Applicants must be willing to travel to various client sites throughout the U.S. Salary: \$54,000 for 40 hours per week. Please send two (2) copies of resume to: Division of Employment and Training, Case #19983247, PO Box 8968, Boston, MA 02114.

Business Analysts: Positions available in our New York, Chicago and San Francisco area offices. Will work with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will apply OO analysis and design methodologies and object modeling techniques to design OO applications. Will be responsible for working with users to define system requirements. Will translate those requirements into clear and precise specifications for the developers to implement. Will design screens, write use cases, design and perform system testing. Requirements: Bachelor's degree in Business, Finance, Computer Information Systems or related field, or foreign equivalent. 2-3 years of business systems analysis experience preferred, which should include software selection, design and/or development, implementation and/or conversion experience. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

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Software Developers: Positions available in our New York, Chicago and San Francisco area offices. Will work with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will design, develop and implement enterprise wide, distributed applications in various OO, client/server, n-tier environments against various relational databases. Will utilize OO languages, including Forte and Java and relational databases such as Informix, Oracle, Sybase, MS SQL Server, and DB2. Requirements: Bachelor's degree in Computer Science, Computer Engineering or Electrical Engineering or foreign equivalent, plus five years of experience which must include programming in an object-oriented programming language; or Master's degree in Computer Science, Computer Engineering, Electrical engineering, or equivalent. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

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Design, develop, test, applications using tools such as COBOL, CICS, JCL, VSAM. Analyze, modify and test programs on IBM Mainframe 3090 using VSAM, COBOL, EasyPlus, JCL. Knowledge of system tools such as Clist, Rexx. \$40,000/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 1 yr. exp. and B.S. in Comp. Sci., eng. rel. field/equiv. Send 2 resumes: Case #19983246, P.O. Box 8968, Boston, MA 02114.

Applications/System Architects: Positions available in our New York, Chicago and San Francisco area offices. Will work with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will design, develop and implement enterprise wide, distributed applications in various OO, client/server, n-tier environments against various relational databases. Will utilize OO languages, including Forte and Java and relational databases such as Informix, Oracle, Sybase, MS SQL Server, and DB2. Will lead development teams. Requirements: Bachelor's degree in Computer Science, Computer Engineering or Electrical Engineering or equivalent, plus five years of experience, which must include experience in programming with an object-oriented programming language; or Master of Science degree in Computer Science, Computer Engineering or Electrical Engineering, or equivalent. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

Software Engineer

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Senior Software Engineer Positions to design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have 1 year of skills in one of the following fields: SAP, Baan or PeopleSoft. Master's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math or Physics or scientific or business related field. Will accept Bachelors degree with five years of progressive experience as computer professional. Salary: \$100,000 per/yr. 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Jaime Lopez, Rapidigm, 4400 Campbells Run Road, Pittsburgh, PA 15205.

Business Analysts: Positions available in our New York, Chicago and San Francisco area offices. Will work with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will apply OO analysis and design methodologies and object modeling techniques to design OO applications. Will be responsible for working with users to define system requirements. Will translate those requirements into clear and precise specifications for the developers to implement. Will design screens, write use cases, design and perform system testing. Requirements: Master's degree in Business, Computer Information Systems or related field, or equivalent. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

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Programmer Analyst

Develop programs in C under UNIX environment and Database administration in Oracle 7.x. Programming and development in FORMS Version 4.5 and Reports 2.5. Use of Oracle DBA tools such as Oracle Enterprises Manager, Oracle Replication Manager. Knowledge of Oracle architecture, performance, tuning, backup, recovery and replication server. \$57,000/yr. 40hr/wk. 9 a.m. - 5 p.m. Must have 2 yrs. exp. (or 2 yrs exp rel occupation of Software Developer/Systems Executive) and B.S. in Comp. Sci., eng. rel. field/equiv. Send 2 resumes: Case #19983085, P.O. Box 8968, Boston, MA 02114.

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Evaluate user requests, analyze operational procedures, identify problems, learn specific input/output requirements, convert project specifications into sequential detailed instructions for coding into computer processable language. Bachelor's Degree in Computer Science or related branch of engineering required, plus experience in the computer software industry SQL Forms 3.0, Developer 2000, Oracle Forms 4.5, Visual Basic, MS Access 7.0, Oracle 6.0/7.x, Windows 3.1/95/NT. 40 Hrs./wk., \$47,000/year. Must have proof of legal authority to work in the United States. Send your resume to the Iowa Workforce Center, 800 Seventh Street, Cedar Rapids, Iowa 52406-0729. Please refer to Job Order IA1101018. Employer paid advertisement.

Software Engineer

Design, develop, test, implement and support client server applications and convert various database applications. Demonstrated ability working with object oriented programming using C, C++, VC++ and databases such as Oracle, Sybase. Demonstrated ability designing GUI's using Visual Workshop and UIMX on Sun Solaris Unix platform. Demonstrated ability working with tools such as Purify, Code Center, Sparc Works. \$64,161/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 1 yr exp. and M.S. Comp. Sci., Eng. rel. field/equiv. Send 2 copies of resume: Job Order #2000-113, P.O. Box 989, Concord, NH 03302-0989.

Senior Programmer/Analyst

to analyze, design, develop, implement and support application software for life insurance systems on mainframes using COBOL, JCL, VSAM, ASSEMBLER and CICS. Require: Bachelor's degree (or equivalent) in Computer Science, an Engineering discipline, or a closely related field with two years of experience in the job offered or in the related occupations of Systems/Programmer Analyst. Each three years of progressively responsible experience in the field will be considered equivalent to an additional one year of college/university education. Extensive travel required on assignment to various company and client sites within the U.S. Salary: \$62,000/year; 8:15 am to 5:15 pm M-F. Send resume to: Elizabeth Haney, Assistant VP, Policy Management Systems Corporation, One P.M.S.C. Center (Int. Of 1-77 & US 21N), Blythwood, SC 29016, Attn: Job AM

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Ceridian	24.6

DOLLAR

Tibco Software Inc. (H)	32.75
Juniper Networks Inc. (H)	27.19
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Entrust Technologies Inc. (H)	21.75
Checkfree (H)	21.22
Analog Devices (H)	21.00
Ariba Inc. (H)	18.13
Network Appliance Inc. (H)	16.13

LOSERS

PERCENT

Synopsis	-27.7
Fiserv	-27.0
Globalstar Telecom. Ltd.	-26.5
The Baan Co. N.V. (L)	-25.9
Wink Communications Inc. (H)	-21.5
Affiliated Computer Servs (L)	-20.7
Syntel Inc.	-18.0
Amazon.com	-17.0

DOLLAR

Yahoo Inc.	-20.66
SGS-Thomson Microelectronics	-19.38
eBay Inc.	-17.44
Wink Communications Inc. (H)	-14.75
Synopsis	-14.44
Amazon.com	-13.19
Sapient Corp.	-12.44
Red Hat Inc.	-11.69

Microsoft Stock Rises As Win 2k Launches

But analysts foresee new OS boosting sales, profits

BY KIM S. NASH

THERE'S NOTHING LIKE a glitzy product launch to boost a company's stock price — but history shows Microsoft Corp. lucked out this time.

Although past operating system launches seemed coincided with dips in Microsoft [Nasdaq:MSFT] stock, last week's Windows 2000 debut was a different story (see chart).

Microsoft shares closed at \$99.63 Thursday, up \$2 from a closing price of \$97.63 the day before.

Contrast that with the small but surprising drops when Windows 95 and 98 were launched. Last Thursday's official debut of Windows 2000 at a party in San Francisco was no exception.

Such drops aren't necessarily unusual, said Thomas O'Keefe, a researcher at First Call Corp. in Boston. "A lot of times you buy in anticipation and then

sell on that day," he said, which can cause the stock price to fall even as the company reports happy news.

For example, the day Windows 95 shipped to much fanfare — retailers such as CompUSA Inc. held "midnight madness" sales for people who couldn't wait for morning to buy the product — Microsoft shares dipped 1%.

Microsoft didn't get a break when it shipped Windows 98 on May 18, 1998, either. Its stock fell 4% that day, which happened to be the same day the U.S.

INDUSTRY ALMANAC

Department of Justice and 20 states filed an antitrust lawsuit against the company. The antitrust battle continues, with Microsoft petitioning Congress

not to let the judge in the case break the company into pieces (see story, page 8).

With Windows 2000's release, Microsoft may have done itself a favor by holding a press conference early last week to talk about what a bargain the software will be and how it has a lower cost of ownership than rivals'. CIBC Oppenheimer World Markets Corp., a brokerage in Toronto, for example, cited the event when it reiterated last week how bullish it is on the stock.

Meanwhile, Wall Street analysts overwhelmingly recommend buying Microsoft stock. This despite the fact that John Connors, Microsoft's chief financial officer, regularly warns Wall Street not to expect gangbuster Windows 2000 right away.

Analysts anticipate Windows 2000 will help boost sales and profits to record levels in the next year. PaineWebber Inc., for example, was optimistic in a report last week: "Expectations have been set so low by management [for sales of] Windows 2000 that even if only 15% to 20% base upgrades, that will still be higher than our forecasts."

52-WEEK RANGE

SOFTWARE OFF -0.1%

EXCH	52-WEEK RANGE	FEB. 18 2 PM	WK NET CHANGE	WK PCT CHANGE
ASWX	105.00	11.00	Active Software (L)	90.50 10.50 13.1
ADBE	102.12	18.84	Adobe Systems Inc. (H)	97.38 9.38 10.7
ARBA	229.75	30.50	Ariba Inc. (H)	229.75 18.13 8.6
AZPN	55.37	8.12	Aspen Technology Inc.	44.50 -5.50 -11.0
ADSK	44.37	17.00	Autodesk Inc.	38.06 0.19 0.5
AVID	34.25	9.43	Avid Technology	14.38 0.38 2.7
BMC	86.62	30.00	BMC Software Inc.	42.56 -0.31 -0.7
BDBJ	132.00	8.18	Business Objects S.A. (H)	117.50 -9.00 -7.1
CDN	32.31	9.18	Cadence Design Systems	18.44 -3.13 -14.5
CBTSY	47.50	8.56	CBT Group Plc. (H)	43.63 -0.25 -0.6
CHKP	198.00	11.50	Checkpoint Software Tech. (H)	196.38 24.63 14.3
CTXS	91.50	13.25	Citrix Systems Inc.	89.50 -1.06 -1.2
CDGN	74.25	19.37	Cognos Inc.	66.06 -2.00 -2.9
CA	79.43	32.12	Computer Associates Int'l Inc.	73.63 3.81 5.5
CPWR	40.00	16.37	Compware Corp.	22.31 1.56 7.5
DCMT	71.31	9.37	Documentum	64.63 -4.44 -6.4
EFII	64.87	32.00	Electronics For Imaging	49.88 1.50 3.1
HNCS	130.00	13.75	Hnc Software	88.63 -6.00 -6.3
HYSL	49.43	9.87	Hyperion Software (H)	44.75 -3.38 -7.0
IDXC	49.12	12.43	IDX Systems	34.25 2.56 8.1
INFA	136.37	16.00	Informatica Corp. (H)	116.03 -4.03 -3.4
IFMX	16.50	6.03	Informix Software Inc.	14.91 -0.28 -1.9
INTU	90.00	22.50	Intuit	61.94 0.38 0.6
JKHY	64.75	26.43	Jack Henry Associates (H)	59.75 -1.19 -1.9
JDEC	43.00	10.87	J.D. Edwards & Co.	39.25 1.00 2.6
LGTO	82.50	15.06	Legato Systems Inc.	33.06 -2.31 -6.5
MACR	90.00	26.37	Macromedia Inc.	72.06 1.13 1.6
MANU	58.12	5.25	Manugistics Group Inc.	49.94 -0.81 -1.6
MENT	18.50	7.75	Mentor Graphics (H)	17.44 3.56 25.7
MSFT	119.93	71.99	Microsoft Corp.	97.56 -3.69 -3.6
NETA	52.56	10.06	Network Associates	29.25 -2.38 -7.5
GMH	127.00	44.75	Network General	104.31 -0.06 -0.1
NOVL	44.56	16.06	Novell Inc. (H)	35.13 -3.75 -9.6
ORCL	64.75	10.50	Oracle Corp. (H)	61.00 -1.88 -3.0
PMTC	35.93	11.68	Parametric Technology Corp.	26.13 3.63 16.1
PSFT	27.75	11.50	PeopleSoft Inc.	23.25 -1.38 -5.6
PIXR	50.62	33.00	Pixar	36.50 -0.25 -0.7
RATL	70.37	21.87	Rational Software Corp. (H)	61.69 7.06 10.3
RHAT	151.31	7.00	Red Hat Inc.	72.25 11.69 13.9
QSFT	120.00	14.00	Quest Software	82.00 -1.50 -1.8
SAP	73.87	23.75	SAP AG	70.56 1.44 2.1
SCUR	24.00	2.25	Secure Computing Corp.	16.13 1.50 10.3
SE	44.93	17.93	Sterling Commerce Inc.	31.88 -3.75 -10.5
SSW	37.50	18.12	Sterling Software Inc. (H)	36.88 1.63 4.6
SDRC	23.43	8.81	Structural Dynamics Research	13.75 0.69 5.3
SYB5	25.00	5.31	Sybase Inc.	21.56 -2.38 -9.9
SYMC	69.37	12.50	Symantec Corp.	64.25 -1.69 -2.6
SNPS	75.62	37.12	Synopsis	37.63 -14.44 -27.7
SCITC	26.50	7.81	Systems & Computer Tech. (H)	26.50 3.69 16.2
BAANF	17.81	5.38	The Baan Co. N.V. (L)	5.38 -1.88 -25.9
TIBX	253.50	15.00	Tibco Software Inc. (H)	244.75 32.75 15.4
TSAL	48.25	20.25	Trans. Sys. Arch.	31.31 6.94 28.5
VRTS	181.50	20.33	Veritas Software Corp.	174.06 -0.31 -0.2
WIND	47.50	11.25	Wind River Systems Inc. (H)	45.41 3.91 9.4

TELECOMMUNICATIONS CARRIERS OFF -5.9%

EXCH	52-WEEK RANGE	FEB. 18 2 PM	WK NET CHANGE	WK PCT CHANGE
AT	91.81	56.31	Alltel Corp.	60.25 -5.06 -7.8
ANDW	25.50	11.00	Andrew Corp.	21.00 -1.69 -7.4
T	63.41	41.50	AT&T	48.00 -0.56 -1.2
BCE	124.56	38.31	BCE Inc.	121.50 2.50 2.1
BEL	69.50	50.62	Bell Atlantic	52.06 -4.44 -7.9
BL5	51.31	39.75	Bell South	39.75 -4.19 -9.5
BRW	41.06	16.31	Cincinnati Bell Inc.	31.63 -2.25 -6.6
CMCSK	57.68	28.90	Comcast	44.69 -5.00 -10.1
CO	37.06	15.37	Comsat Corp.	16.63 -0.19 -1.1
COX	58.37	32.00	Cox Communications Inc.	45.50 -8.06 -15.1
GSTRF	53.75	12.62	Globalstar Telecom. Ltd.	23.38 -8.44 -26.5
GTE	78.50	57.00	GTE Corp.	81.81 -9.25 -7.8
NXTL	134.00	27.43	NexTel Communications (H)	121.88 -9.25 -7.1
SPOT	74.25	26.37	Panamsat	45.75 -3.25 -6.6
QCOM	200.00	7.67	Qualcomm	136.50 2.00 1.5
SBC	59.87	37.06	SBC Communications (L)	37.06 -3.88 -9.5
FDN	75.93	38.65	Sprint Corp.	84.00 -1.88 -2.8
TDS	137.00	48.62	Telephone and Data Systems	103.38 3.88 3.9
USW	78.75	51.50	US West (H)	78.75 4.81 6.5
VIA	63.31	36.68	Viacom	55.06 -6.19 -10.1
WCIL	86.37	28.50	Winstar Communications Inc.	78.63 0.63 0.8
WCOM	64.51	40.62	MCI Worldcom Inc.	47.06 -3.88 -7.6

SERVICES OFF -4.2%

EXCH	52-WEEK RANGE	FEB. 18 2 PM	WK NET CHANGE	WK PCT CHANGE
ACXM	30.62	14.56	Acxiom Corp.	25.94 -3.69 -12.4
ACS	53.00	31.25	Affiliated Computer Servs (L)	32.63 -8.50 -20.7
AMSY	37.68	19.75	American Mgt. Systems	29.94 3.06 11.4
AUD	54.81	37.37	Automatic Data Processing	44.94 -1.31 -2.8
BSYS	69.00	41.37	Bisys Group Inc.	57.13 -6.63 -10.4
CATP	32.25	10.62	Cambridge Technology Ptnrs	15.81 -2.06 -11.5
CEN	39.50	14.75	Ceridian	19.63 3.88 24.6
CBR	29.81	13.75	Ciber Inc.	17.94 -0.56 -3.0
COO	43.00	10.75	Comdisco	38.19 -1.25 -3.3
CHRTZ	21.00	9.25	Computer Horizons Corp.	16.19 2.19 15.6
DST	94.93	52.37	Computer Sciences	80.19 -3.38 -4.0
CSF	76.43	50.93	Dst Systems Inc.	61.69 -3.06 -4.7
EDS	76.68	44.12	Electronic Data Systems	67.38 5.94 -8.1
FDC	54.25	34.43	First Data Group	47.13 -3.31 -6.6
FISV	40.75	24.12	Fiserv	25.06 -9.25 -27.0
IT	25.75	9.56	Gartner Group	13.44 -1.06 -7.3
KEA	35.00	17.25	Keane	23.13 -2.50 -9.8
NDC	55.25	21.75	National Data	30.75 -6.25 -16.9
PAYX	48.62	23.56	Paychex Inc. (H)	46.81 2.50 5.6
PER	85.75	15.31	Perot Systems Corp.	25.50 3.00 13.3
REGI	9.75	2.68	Renaissance Worldwide	5.31 -1.06 -16.7
REY	33.00	17.31	Reynolds & Reynolds	26.88 -1.63 -5.7
SFE	191.00	35.75	Safeguard Scientifics	151.38 -2.06 1.3
SAPE	151.18	23.87	Sapient Corp.	75.56 12.44 14.1
SMS	73.50	35.50	Shared Medical Systems	40.00 -1.44 -3.5
SDS	41.93	16.87	Sungard Data Systems	32.25 -0.13 -0.4
SYNT	20.93	7.00	Syntel Inc.	12.50 -2.75 -18.0
TECD	44.68	14.50	Tech Data	21.63 -0.63 -2.8
TENF	67.93	17.00	TenFold Corp.	53.25 7.50 12.3
TSS	26.00	14.12	Total System Services Inc.	16.13 0.94 5.5
TSAL	48.25	20.25	Transaction Sys. Architects	31.31 6.94 28.5

NETWORK UP 6.1%

EXCH	52-WEEK RANGE	FEB. 18 2 PM	WK NET CHANGE	WK PCT CHANGE
CDMS	77.00	20.00	3Com Corp. (H)	69.31 6.31 10.0
ADCT	45.75	17.18	ADC Telecommunications (H)	43.88 7.50 20.6
ANTC	60.25	18.62	Antec	42.00 6.50 18.3
BNYN	40.56	6.25	Banyan Systems Inc. (H)	36.25 3.00 9.0
CS	41.00	7.18	Cabletron Systems (H)	35.75 1.13 3.1
CNEBF	9.75	2.87	Call-Net Enterprises	4.31 0.31 7.6
CSCD	136.25	45.81	Cisco Systems Inc.	129.88 -0.75 -0.6
ECIL	45.00	23.75	ECI Telecom	33.63 7.13 26.9
ENTU	101.00	16.87	Entrust Technologies Inc. (H)	87.75 21.75 33.0
HRS	40.62	15.50	Harris Corp.	31.44 0.31 1.0
GMH	127.00	44.75	Hughes Electronics/GM	104.31 -0.06 -0.1
ERICY	92.12	20.50	LM Ericsson (H)	89.38 0.66 0.7
JNPR	254.69	11.33	Juniper Networks Inc. (H)	254.69 27.19 12.0

52-WEEK RANGE

SEMICONDUCTORS, CHIPS & EQUIPMENT OFF -0.1%

EXCH	52-WEEK RANGE	FEB. 18 2 PM	WK NET CHANGE	WK PCT CHANGE
LU	84.18	47.00	Lucent Technologies	52.31 -1.38 -2.6
MADGF	15.43	1.43	Madge Networks	12.63 0.00 0.0
NCDI	9.00	3.87	Network Computing Dev	6.06 0.50 9.0
NWK	14.81	7.31	Network Equipment Tech.	10.94 -0.31 -2.8
NN	39.50	14.00	Newbridge Networks	32.63 -1.25 -3.7
NOK	208.75	62.31	Nokia Corp.	194.75 -2.75 -1.4
NT	126.50	26.93	Northern Telecom Ltd.	122.31 2.44 2.0
PAIR	18.56	7.93	Pairgain Technologies Inc.	15.38 1.00 6.5
PCTL	11.00	3.25	Picturatel	8.25 0.75 10.0
SFA	107.75	24.50	Scientific Atlanta (H)	104.81 3.38 3.3
TLAB	77.25	35.84	Tellabs Inc.	57.38 4.75 7.6
USW	78.75	51.50	US West (H)	78.75 4.81 6.5
VRLK	13.25	1.81	Verilink (H)	11.38 1.53 15.6
WSTL	31.18	3.61	Westell Technology Inc. (H)	25.50 -0.88 -3.3

COMPUTER SYSTEMS UP 3.0%

ADPT	63.56	19.00	Adaptec	47.88	0.38	0.8
AMD	45.50	14.56	Advanced Micro Devices (H)	42.56	-0.38	-0.9
ALTR	80.00	23.93	Altera (H)	75.63	1.69	2.3
ADI	143.62	24.37	Analog Devices (H)	139.50	21.00	17.7
AMAT	188.93	48.43	Applied Materials (H)	179.56	11.63	6.9
ASML	146.43	36.37	ASML Lithography Holding	129.50	8.25	-6.0
FC5	39.50	18.50	Fairchild Semiconductor Corp.	37.44	-1.25	-3.2
HRS	40.62	15.50	Harris Corp.	31.44	0.31	1.0
INTC	112.87	50.12	Intel Corp. (H)	109.56	1.38	1.3
KLAC	74.12	21.18	Kla Instruments (H)	70.44	0.00	0.0
LLTC	111.50	41.75	Linear Technology (H)	101.38	-5.50	-5.1
LSI	55.96	11.37	LSI Logic (L)	52.13	0.44	0.8
MXIM	60.93	19.93	Maxim Integrated Products	55.25	-4.13	-6.9
MU	85.00	34.25	Micron Technology	64.00	-7.50	-10.5
MOT	161.37	63.31	Motorola	146.00	-7.69	-5.0
NSM	66.62	8.87	National Semiconductor	65.19	0.50	0.8
STM	221.62	40.25	SGS-Thomson Microelectronics	189.81	19.38	-9.3
SLR	98.00	37.28	Soletron Corp.	68.31	-3.50	-4.9
TER	81.31	21.84	Teradyne (H)	78.38	1.13	1.5
TXN	145.00	43.00	Texas Instruments	141.38	0.13	0.1
TSU	248.50	18.65	Uniphase	207.31	4.56	2.3
VT55	72.25	20.37	Vitesse Semiconductor Corp	65.50	1.13	-1.7
XLNX	69.50	16.43	Xilinx (H)	67.19	-9.19	15.0

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Security

law enforcement by meeting with them before problems occur. "You can break the ice by picking up the phone," he said.

Federal officials will try to break the ice in a much larger way Tuesday, when they meet in Washington with officials of more than 100 companies in the finance, transportation, energy and high-tech industries.

The Commerce Department is sponsoring the meeting as part of an effort to get companies to put more focus on information security, but it says the outcome of the meeting is largely up to the companies. "We're not going in with an agenda," said Commerce Undersecretary William Reinsch. "What the government mostly can do is ring the alarm, promote research and development and promote the dissemination of best practices and best-practice tools," he said.

William Randle, who handles information security at Huntington Bancshares Inc. in Columbus, Ohio, said private-sector and government cooperation is needed. "It's only by working together with all the interested parties that we can take some of the risk out of the Internet," he said.

The White House last week used the denial-of-service attacks earlier this month on eBay, Yahoo Inc. and others as a catalyst to spur private-industry cooperation in combating threats to the Internet.

President Clinton met with some two dozen high-tech executives, legal experts and academic professionals in a "cybersummit" to discuss developing a stronger partnership, as well as speeding up funding for programs to train people in cybersecurity careers.

White House Chief of Staff John Podesta said government and industry have to "raise the level of security practice." The tools for combating attacks on the Internet are available but aren't being used. "We need to make the government a role model," he said. ▀

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Ordering System

cost-reduction program, integration of acquisitions and preparation for the Y2k changeover. That caused missteps," said CEO Clyde R. Moore last week.

In addition to \$20 million in delayed shipments, the recently installed Thomas & Betts Order Processing System (TOPS) cost T&B \$24 million in lost sales for the fourth quarter (see chart). As of last week, the backlog for orders was two days at the company's 1 million-sq.-ft. central distribution center, down from five days at all three satellite distribution centers late last year.

TOPS comprises software applications for processing and fulfilling orders. The ordering and fulfillment systems are IBM mainframe-based, layered on Adabas, using the Natural interface

language. All of this is front-ended with dynamic HTML, Java- and XML-based processes. IBM's MQSeries middleware connects the system to T&B's Oracle financial system and to AS/400-based manufacturing systems.

TOPS also includes a worldwide online ordering system and gives customers the ability to get pricing and product availability information and to track their orders.

Upon implementation, the order processing and tracking parts performed as anticipated, said CIO John Haluska.

But when volume grew, the fulfillment systems couldn't handle the stress. "After three intense weeks, we began to make progress and started eating away at the backlog, but by that time, the damage to our fourth quarter had been done," Haluska said.

Still, Haluska said, he considers the fourth-quarter meltdown a "hiccup," and that TOPS is some-



CIO HALUSKA:
Damage had
been done

Continued from page 1

B-to-B Portals

ultraefficient, but they could turn the manufacturing industry into a low-margin, commodity business, warned information technology executives at an IBM-sponsored seminar here last week.

"I think they present a very serious challenge to the business operations" of most manufacturers, said Richard Krok, IT manager at a chemical company in Cranbury, N.J.

Online trading exchanges and vertical industry portals promise huge efficiency gains and lower costs through electronic buying and selling. They give customers a way to instantly compare price and availability across multiple manufacturers and products.

But they also threaten to eventually force most manufacturers to compete mainly on product specifications and price, thereby putting pressure

on profits, said Krok, IT manager for U.S. operations at the huge French chemical maker Rhodia SA.

Put another way: "How do you compete with real-time pricing information on the Web?" said Gary Hargraves, an e-commerce manager at The Goodyear Tire & Rubber Co. in Akron, Ohio.

If companies don't act, "somebody will step between you and your customer and [eventually] turn you into a commodity-based supplier," said Stewart McCutcheon, director of electronic-business technology at Du Pont Co. in Wilmington, Del.

By 2004, electronic marketplaces will account for 53% of \$2.7 trillion in business-to-business e-commerce, according to a prediction from Forrester Research Inc. in Cambridge, Mass.

Online markets "are forcing a fundamental change in the way we look at our business," said Fred A. Buehler, director of electronic business at East-

Expense Report

Related losses at T&B:

Delayed shipments	\$20M
Lost fourth-quarter sales	\$24M
Increased freight and labor costs	\$18M

times exceeding expectations.

"What went wrong was the integration of our order processing [system] with the software that drives our distribution centers. It was causing shipments' timing to be out of sync with conveyor-belt systems at the distribution center," said Renee Johansen, a T&B spokeswoman.

She said T&B also had problems implementing the part of the system that gives customers Web access to real-time data about where their orders are in the manufacturing and shipping processes.

"It's very similar to what you have seen happen with Grainger and Hershey Foods. Pretty much any of us with existing brick-and-mortar busi-

nesses are moving to the Web to enable e-commerce. It's not an easy, flawless task," she said.

Candy maker Hershey Foods Corp. fingered problems it had processing orders with SAP AG's R/3 software for a 19% drop in third-quarter profits.

Chicago-based W. W. Grainger Inc. also had SAP implementation woes, leading to \$19 million in lost sales and \$23 million in reduced earnings in the second and third quarters of 1999. The \$4.3 billion company also expected fourth-quarter profits to sink as much as 45% below Wall Street's expectations [News, Jan. 10].

"It's not at all surprising that this happens," said David Dobrin, an analyst at Benchmarking Partners Inc. in Cambridge, Mass. "This stuff is really hard to do."

T&B's fourth-quarter net earnings totaled \$23.2 million, compared with a net of \$46.1 million a year earlier. ▀

MOREONLINE

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man Chemical Co. in Kingsport, Tenn.

Companies such as Du Pont and Eastman Chemical are taking an if-you-can't-beat-them-join-them approach. Both are actively setting up their own trading sites and vertical portals in partnership with other dot-com ventures.

Du Pont, for instance, is one of the partners in an upcoming technology purchasing Web site called Yet2.com. The company also has a partnership with ImproveNet Inc., a Redwood City, Calif., business portal for buying construction materials. It has another partnership with Houston-based SpecChem.com Inc. for a specialty chemicals site.

Eastman Chemical has been getting into similar ventures. Last week, the company announced the launch of an Internet-based transportation management service for manufacturers and distributors of chemicals and plastics. It's a collaboration with Global Logistics Technology Inc., a logis-

tics software start-up in Shelton, Conn. (see Briefs, page 53).

So far, Milwaukee-based Brady Corp. has remained largely untouched by digital marketplaces and price-comparison sites. The company, which makes industrial labels and signs, has nevertheless launched several business-to-business initiatives to make sure its customers don't stray.

One example: Brady is helping its customers put up Web pages on their intranets that contain information on approved Brady products and how to buy them online. The idea is to make it easier for customers to buy Brady products.

The portal problem will take care of itself if companies take care of their customers, said Katherine Hudson, CEO of Brady. As an established manufacturing company, "you've already got the business, you've got the infrastructure, you've got the customers. Just don't get distracted by the big bad dot-com that's headed your way," she said. ▀



FRANK HAYES/FRANKLY SPEAKING

Win 2k or Win 63k?

IT'S OFFICIAL: Last Tuesday, Virginia's general assembly became the first state legislature in the U.S. to pass the Uniform Computer Information Transactions Act (UCITA). That's the law that makes shrink-wrapped software licenses legally binding. The votes came just days after an internal Microsoft memo surfaced, stating that 63,000 "potential known defects" — bugs, design problems, you name it — are still unfixed in the shipping version of Windows 2000.

If you want to understand why Microsoft and other software vendors have lobbied so hard for UCITA, just reread that last sentence.

Sixty-three thousand known defects. That's after two and a half years of bug fixers deciding each day which bugs to fix, fixing them, recompiling the whole mess and testing it all night — then starting all over again with a new batch of bugs the next morning.

And that's in addition to more than 65,000 other "potential issues" turned up by Microsoft's Prefix testing tool. Microsoft figures only about 28,000 of the "issues" turned up by Prefix will turn out to be real problems.

Full disclosure: We don't know how serious those 63,000 "defects" and 28,000 "issues" are. In fact, *Computerworld* hasn't seen the memo, which was turned up by a reporter for another publication. But a Microsoft Windows marketing director confirmed that the memo's contents as reported are authentic.

What we do know is what a Microsoft manager on the Windows 2000 development team, Marc Lucovsky, wrote in the memo: Microsoft is shipping a product with tens of thousands of defects the company knows about but hasn't corrected — and that some of those will probably cause customers problems.

In the summer of 1998 — just after Windows 2000 (then called Windows NT 5.0) missed its first promised shipping target — I described the debacle in this column and wrote, "Windows NT 5.0 is hopelessly out of control. It's a classic monster project run amok. It will never really be done — just declared finished someday when Bill Gates gets fed up with waiting for this cash sink to turn into cash flow and sets it loose on the world."

Now we know that's exactly what happened. The unfinished Win 2k is finally shipping —

63,000 "known defects" and all.

Can *any* software be perfectly bug-free? In IT shops, we know the answer too well. Even at best, we can't find and fix them all.

But these aren't bugs Microsoft couldn't find or can't fix. In fact, Lucovsky's memo says coding work on future Windows releases won't proceed until all the current Windows 2000 bugs are fixed or cleared.

Now, if a new car model ships with one major safety-threatening defect, all those cars will be recalled for repair. If an automaker or any other consumer product company *knowingly* ships defective products, that company is instantly a ripe target for a class-action lawsuit.

Which brings us to UCITA.

UCITA's purpose is to protect software vendors from legal liability for product defects. With UCITA, if software you buy has a defect — or 63,000 defects — you're out of luck. You've got no legal recourse. If a defect causes your business to tank — even if the software vendor knew about and didn't disclose the problem when you bought the software — you've got no legal recourse. It says so right in the warranty's fine print.

Which could explain why Microsoft isn't so worried that news leaked out about all those bugs in Windows 2000.

UCITA doesn't have to pass in all 50 states. Just one may be enough.

So if Microsoft changes its software licenses to read "governed by the laws of the Commonwealth of Virginia," you'll know why. ▀

Hayes, *Computerworld's* staff columnist, has covered IT for more than 20 years. His e-mail address is frank_hayes@computerworld.com.

*With UCITA,
if software
you buy has
a defect...
you're out
of luck.*



SHARK TANK

LIVING DANGEROUSLY IT operations pilot fish, counting the hours till his "mucho fantastic date," is interrupted by a request: Could he process and print user reports urgently needed Monday morning? Pilot fish dutifully cancels hot date, and at 4 a.m. Sunday, finishes printing a small mountain of reports. Bright and early Monday, user shows up, selects one slim file and discards the rest — duplicates. Seems the programmer running the reports repeatedly canceled jobs but failed to kill them in the printer queue.

Y2K PLUS SEVEN WEEKS

and counting: Pilot fish reports her latest payment-due notice from MetLife demands she pay up by Feb. 31, 2000.

NICE-GUY PROGRAMMER

at a wireless company comes up with the idea of linking Web views of trouble tickets to a map of the problem site. He builds it in a couple of months of his spare time. Cost: a couple thou. Result: Users shout "Huzzah!" But another group has officially worked for a year on a similar product, which costs more and doesn't

actually work yet. Its director goes territorial and calls to shut down the pilot fish's map. Then he changes his mind — his team needs to see how it works so it can make its version work, too.

MEDICAL GROUP'S IT department starts piling the apps on SQL Server. LAN administrator asks for training. "No money for training," the MIS director says. "How about if I pay for it myself — can I get paid time off?" the pilot fish asks. "Use your vacation," he's told. So the pilot fish studies at night and finally gets certified. Last week, the pilot fish happens to glimpse a memo to the top IT honcho in which the MIS director boasts of his "leadership which directly resulted in the LAN administrator becoming a Microsoft Certified Database Administrator" and saved the cost of hiring a new database administrator. Yeah, but what about the cost of replacing a newly disgruntled LAN admin?

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The 5th Wave



"If it works, it works. I've just never seen network cabling connected with Chinese handcuffs before."

E-mail: richtennant@the5thwave.com

What do **you** want the Internet to be? SM

"A road to a world with
no borders, no boundaries, no flags, no countries.
Where the heart is the only
passport you carry."
- Carlos Santana

**Internet
Telephony**

And what a world it's going to be, Carlos. To help us all get there as soon as possible, we're building the new, high-performance Internet. Designed to the highest standards of quality, it's faster and more reliable than ever. Enabling people and businesses to communicate and collaborate as never before. And bringing about the convergence of the Internet and the telephone network through Internet Telephony solutions. Which create avenues of opportunity – both social and economic – that know no boundaries. So come together, right now with Nortel Networks™. And make the Internet whatever you want it to be. nortelnetworks.com

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